

'57 FORD and LINCOLN Performance Tests

NOVEMBER 1956 25¢

MT DETROIT INTERVIEWS  
FORD chiefs on  
'57 STYLING  
'57 ENGINEERING

# MOTOR TREND



'57 FORD

## '57 PLYMOUTH Mechanical Features

see page 32

SNEAK  
PREVIEW!

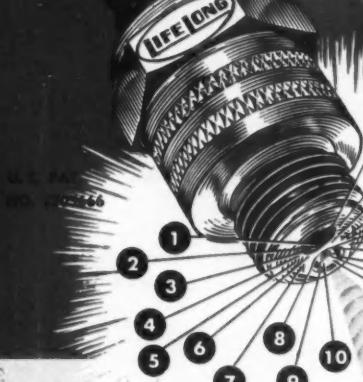
'57 LINCOLN



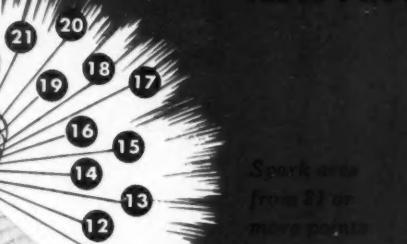
# New Spark Plug Invention!

SELF-CLEANING, 21 POINT

## Nickel-Cadmium SPARK PLUG



U.S. PAT.  
NO. 2,526,666



**THE INSULATOR** ... High-voltage patented Ebanite® insulator, developed and used only by Life-Long, has a hardness in the same range as precious jewels. You can identify Life-Long Plugs by the black insulators. This costly new material has 20 times higher thermal conductivity than ordinary insulators.

**THE BUSINESS END** ... New type solid electrodes have no points to burn off! The "business" end of Life-Long Plug utilizes unique nickel-cadmium electrodes to produce fuller, hotter spark arcing from 21 or more points and spreading around the full 360° circle. Life-Long Plugs have approximately 40 times more firing surface than conventional one-electrode plugs, giving more efficient, even combustion.

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**BONDED GUARANTEE**  
I certify that the set of self-cleaning, 21 pt. Life-Long Nickel-Cadmium Spark Plugs you will receive are identical to those used in my own car for over 100,000 miles. I guarantee that Life-Long Plugs will give you an immediate horsepower and mileage gain and will continue to fire clean, hot and steady without cleaning or regapping.

*J. M. Watt*  
T. M. Watt, President  
LIFE-LONG SPARK PLUG CORP.

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140 Kansas Street, El Segundo, California

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Name \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

Year of Car \_\_\_\_\_ Model of Car \_\_\_\_\_

Make of Car \_\_\_\_\_ No. of Cylinders \_\_\_\_\_

I enclose  check  cash  money order

TESTS PROVE: ★ 10 HORSEPOWER GAIN  
★ 9 MPH GREATER SPEED  
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### OIL INDUSTRY RESEARCH DISCOVERS AMAZING ELECTRODE SECRET

Research engineers of leading oil companies recently revealed that nickel-cadmium is the most perfect material yet developed for the electrodes of spark plugs designed for modern high-compression, internal combustion automobile engines. The nickel-cadmium solid electrode of the Life-Long Plug has ideal characteristics of extremely high conductivity and durability, being able to withstand temperatures of 3500° indefinitely.

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These same research engineers also discovered that a new alloy (which we call Cadalloy) introduced into the combustion chamber of a plug, acts as a catalyst to produce the most efficient fuel combustion. Life-Long Plugs are the first to use this important discovery!

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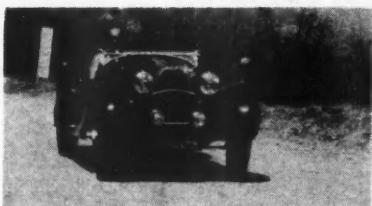
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Technical Advisor.....Doug Moreton

**SPECIAL THIS ISSUE . . .**



A NEW CAR that's really NEW—the '57 Ford should prove to be all that Ford lovers had hoped for. Page 20



THE BUGATTI. Now we know why it occupies such a sacred place among the greats. Story on page 50



TWO OF THE MOST BEAUTIFUL customs from the Custom Cars Annual are presented on page 40

THE COVER: Presenting the first cars of the new year—the '57 Ford and '57 Lincoln. In the upper photo, George Walker, Director of Styling for the Ford Motor Co., proudly introduces MT's Detroit Editor, Don MacDonald, to his beautiful creation, the Fairlane convertible. Below, the new Lincoln Premiere four-door hardtop shows off its sophisticated lines.

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1956**

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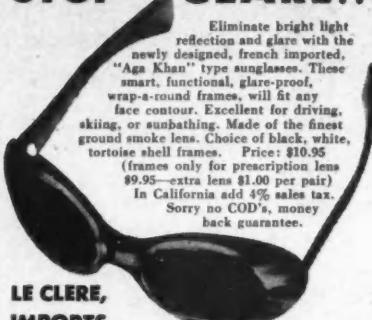
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**next month**

THE '57 CARS will occupy our exclusive attention in the December issue. Watch for complete tests of two of the hottest new cars, plus behind-the-wheel impressions of most of the other '57 models.

## STOP GLARE!!!



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HASTINGS MANUFACTURING COMPANY  
Hastings, Michigan, Dept. MT-1

Name.....  
Street.....  
City.....Zone.....State.....  
Make of Car.....Engine Model.....  
Year.....Miles Driven.....No. Cyl.....  
I enclose  money order  cash  check

**MEMO**

MEMORANDUM FOR BETTER DRIVING AND  
SAFETY IN AUTOMOBILE TRAVEL  
TO: ALL MEMBERS OF THE NATIONAL AUTOMOBILE CLUB  
FROM: NATIONAL AUTOMOBILE CLUB

### from the editor

TWO CARS we have driven lately paradoxically point up the fact that modern-day automobile performance is just about where it should remain—at least until we improve our highways and traffic flow patterns through city streets.

Over Labor Day weekend, we took a drive to San Diego, 135 miles south of Los Angeles. With a normal amount of traffic and a little bit of good luck you can make the trip in 2½ to three hours. On Labor Day weekend it took 4½ hours because of many sections where we were bumper to bumper for miles. The horsepower of the Continental Mark II was used to no more advantage than the car we drove later, the 19-horsepower Lloyd 600. This is not intended to compare these two cars, since one is the near ultimate in comfort while the other is the bare minimum; however, it does serve to pose the question, "Why do we need more horsepower?"

We would not want the manufacturers to call a halt to progress, but we certainly are loudly proclaiming that we seriously need more immediate action to unclog the highways and byways of this country. The heart will cease to pump if the arteries are clogged.

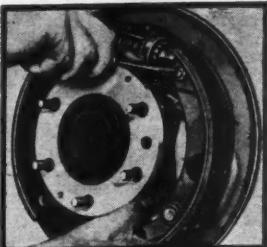


HERE'S A RELEASE from the National Automobile Club that recently crossed our desk. It certainly deserves publication:

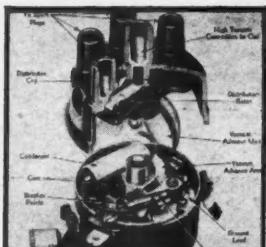
"It's about time our feeling for moral law was applied to motoring. Most people brought up in a modern community in our modern society manage to acquire a fairly distinct feeling for moral law. By the constant guidance of parents, teachers, officers of their church, and association with their friends, by the reading of papers and books, they come to know that it is not right to steal, to hurt or maim someone, to kill, and they go through their lives with a constant awareness of what is wrong and what is right in their conduct.

"Yet somehow or other, when it comes to the matter of driving, all too many of us seem to lose all such feeling for the moral law. When we get behind the wheel of a car we seem to step out from behind our obligations to ourselves and to our fellows, step into a realm of moral anarchy, and proceed to drive in a way that endangers our own lives and the lives of others. We speed and weave, cut across, dash thru blind intersections at a breakneck pace, pass when approaching a curve or the crest of a hill, come darting out from the curb without taking the slightest interest in what cars may be coming up from behind, and yet we know that any of these practices can end in smashed cars, bruised or maimed bodies, or brutally murdered men, women, or children.

"With 2,158,000 injuries and 37,800 deaths on our streets and highways last year, it's about time we brought an increased awareness of the moral law to bear in the field of driving. The next time you get behind the wheel of your car, resolve to drive in such a way that there will be no chance of your smashing another man's car, breaking his body, taking his life. The next time you get behind the wheel of your car, feel strongly about the moral law."



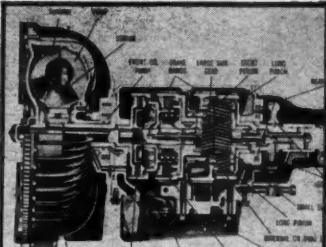
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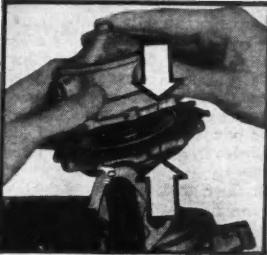


You get illustrated adjustment procedures for all types of carburetors.

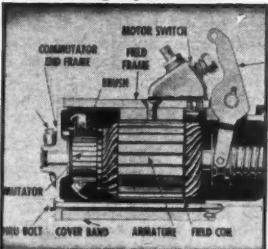


**ALL AUTOMATIC TRANSMISSIONS** are fully covered in special big section. (NOTE: All pictures shown here are greatly reduced in size. Actually, this giant book is almost a foot high!)

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Amazed So! and Friend. "I amazed myself and my friends, too. Now do jobs that stumped me before." — Michael Balicezy, New York, N. J.

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# McCulloch Supercharger

## 3> Tips



by  
John Thompson

Jim Rathmann, one of America's top big-car race drivers (and a McCulloch supercharger distributor in Miami, Fla., by the way) proves he knows a thing or two about engine performance on water as well as land. Jim's hard at it converting standard Chevrolet V-8 engines for use as marine power plants. He claims his 265 cu. in. Chevy, with McCulloch supercharger, "takes to water like it was born for the job."

*Further evidence of the versatility of the McCulloch supercharger is this latest listing of kits available for truck engines: Cummins 200 (Kenworth, Peterbilt, White, Diamond T, Autocar); Ford, '56, F-100 through F-700, 2 or 4 bbl. carb either high or low mount fan; Ford '54 through '56, F-750 through F-900, 2 or 4 bbl. carb. Additional supercharger kits are being developed for Cummins HR and HRB, Mack Thermodyne, L-190 International, White and Reo-6.*

Another McCulloch distributor in the news this month is Orville Bier, the major-domo of chain saws and superchargers in Boise, Idaho. It seems that Orville has been taking on all comers with his McCulloch supercharged '55 Ford Ranch Wagon. In 12 competitive outings, he's nabbed 11 trophies with his stick shift, overdrive wagon.

*If you've ever peered into a video tube of an evening, chances are better than average that you've seen the name, Roland Reed, heading up such shows as My Little Margie, Waterfront, Mystery Theatre, etc. The noted TV producer has just completed installation of two McCulloch superchargers on a V-12 Scripps marine engine (one blower on each bank). The engine will power a 26 ft. boat owned by Mr. Reed.*

This month's mailbag contained a letter from a reader who wants to know "why all the fuss about engine performance and acceleration? Can't people go fast enough now?"

*Those are a couple of pretty fair questions, and I'd like to answer them now. Truth of the matter is, the McCulloch supercharger, while adding from 5 to 20 mph to a car's top speed and dramatically stepping-up 0 to 60 acceleration, is actually a tremendous safety factor! The reason: it provides a great amount of reserve horsepower for use in passing at highway speeds. Law enforcement officials will tell you that lack of acceleration when you need it is one of the big reasons for auto accidents. Another thing to remember about the McCulloch supercharger is that for all its good points, it does not cause a loss in engine smoothness or reliability.*

If you're interested in stepping-up the performance of your automobile, just write me, John Thompson, Paxton Products Division, McCulloch Motors Corp., 827 West Olive St., Inglewood, Calif. Tell me the make and year of your car and carburetor type; if you have power equipment, please describe it. I'll send you price, details, an illustrated folder, and the name and address of your nearest McCulloch dealer.

## LETTERS

### OPEN LETTERS TO THE MANUFACTURERS

#### Gentlemen:

I read with interest your story on the "Cadilette" [Sept. 1956 MT]. This recalls to my mind an idea I have had: Why doesn't one of the foreign divisions of GM—say Opel—build a car the size of an Opel but of a body design closely simulating a Cadillac and market it in the U.S.? This would not tend to lower Cadillac's prestige whereas a mass-produced Chevrolet patterned after Cadillac probably would. At the same time, the prestige of the small car would be raised.

I would be pleased to learn your readers' reaction to this.

Alan R. Fisher Wilmette, Ill.

#### Dear Sir:

I recently returned from a visit to one of the "Big Three" of the automotive industry. I went on a tour through the steel rolling mills, the stamping plant, and the assembly line.

The way the cars are assembled is actually humorous. The slam-bang workmanship that goes into the autos is a crime and a shame. Where a mallet is supposed to be used, they use a box wrench. Numerous times I saw workers force-fitting doors, hoods and suspension parts. The best part is towards the end, where the cars are allowed to pile up at the end of the conveyor if a driveway man is not there, or if the engine will not start immediately. When they get the engines moving, they are taken to their highest rev limit and the cars are driven off to the alignment lanes in a unique manner. Step one: start engine and floor accelerator. Step two: drop into low or first gear as the case may be, and deposit 10 feet of B. F. Goodrich on the floor.

For my money, I'll take European machinery every time.

Paul Schindler Cincinnati, Ohio

#### Gentlemen:

I have my fourth postwar car. The workmanship gets progressively worse on the later models. . . . I do not like big cars, but the workmanship on the small cars is terrible. I would like to see Chrysler market a small, quality four-passenger car for a price consistent with quality, around \$3500.

E. O'Brien Chicago

#### Gentlemen:

During the first 12,000 miles of driving my '54 car, it was necessary to have two bent rear end housings replaced, which in turn [was followed by] a new set of tires; a new fuel pump; a new booster; two new windshield washer transmissions;

front end of hood repainted due to peeling; two new radios; window pulley inside door replaced; rear window mechanism replaced and numerous rattles corrected.

Why would it not be advantageous to General Motors to have a large Service Center in every city which was fully equipped with the proper tools and good mechanics to service all General Motors cars efficiently and at a reasonable cost? This would put the dealer strictly in the sales business and put the service on what would appear to be a much more economical basis.

Howard F. Roeding Boston

#### Dear Sir:

Here is one more letter you can add to the pile from dissatisfied '56 car owners. The finance company and I bought one in Dec. '55, and to this day there are the same troubles in it as when it left the assembly line. Water leaks, rusty chrome, rusty side panels, sticking doors, wheel shimmy and others too numerous to mention. The dealer is helpless—I don't have time to wait in line because of all the others with the same problems. I blame myself for this because I should not have been so stupid as to fall for a nice-looking hardtop—all is not gold that glitters.

Albert Scott Edgewood, Md.

#### Gentlemen:

Two years ago I purchased a new 1954 Mercury, and besides the usual bugs, I had a peculiar "cutting out" in the engine at certain speeds. Of course, as long as I had my warranty in effect, they more or less tried to find out the cause. After the warranty had expired, the service manager as much as told me that I had a strong imagination.

About the time I had 18,000 miles on the car, I wrote to the Mercury Division and received a courteous reply advising me to take the car back to the dealer. This time the engine was given a thorough going over, a new camshaft was installed and, as a last resort—a new carburetor. That did it—and it never ran better. Today, with over 23,000 miles, the engine is silky-smooth and to put it mildly, I am a happy Mercury owner.

I originally intended to write the Ford Motor Co. a word of thanks, but I thought that a letter to your magazine would also be read by others as well. The cost of the work was assumed by Ford. If more manufacturers would follow this example, I'm certain that the general public would be a lot more satisfied.

Robert E. Pfoutz Perrysburg, Ohio

### FOUR EYES?

*The '56 Chevrolet you saw driving around Detroit with dual headlights was one of many experimental cars driven by GM officials to test the forthcoming dual headlight installation. Due to 9 states who have not yet made this installation legal, '57 models will either not have a dual headlight installation available or will have an optional installation. As far as we know, there is no kit available for '56 or prior-model cars of any make, for the simple reason that installation of two side-by-side, or two over-and-under five-inch lights would require much metal rework.—Editor*



#### A NEAR-TRAGIC TESTIMONIAL

Dear Sir:

At about 2:00 A.M. on June 6 this Plymouth Special taxi-model car was involved



in an accident. Thank God this 1956 Plymouth was equipped with safety door-latches, which in my opinion saved the driver's life. As you can see from the picture, all four doors remained closed even though the car rolled over several times.

Norton G. Fluker  
Chief of Police

Gowanda, N.Y.

#### FORGET QUALITY?

Dear Sir:

Re your August editorial "Take Heed, Detroit," may I make the suggestion that you just forget about the poor quality of Detroit iron for the situation is bound to get worse and as it gets worse will come more imports and with them more automotive ideas and then finally we may get some action from Detroit. This MOTOR TREND reader would like better-quality domestic autos as much as the next fellow but the fact still remains that no one has to buy a domestic car.

If we MOTOR TREND readers are going to press the domestic auto makers for something better we have to know what we can reasonably ask for. Call it a "Great Debate," call it what you will but give us some ammunition so we can ask some pointed questions of the auto makers.

Robert Brooks

Waukegan, Ill.

#### GOOF

Gentlemen

In the October '56 MT a cutline describing General Tire & Rubber Co.'s new Dual 90 tire was inadvertently slipped under the photograph showing the difference between 14- and 15-inch Custom Super Cushion tires produced by our company.

We wish to relate, nonetheless, that the October issue is a very interesting, timely piece of work.

J. P. Banks  
Akron, Ohio  
Goodyear Tire & Rubber Co.

#### IT'S ALL IN HOW YOU DO IT!

Dear Sir:

Knowing that your magazine endeavors to keep its articles quite accurate, may we respectfully suggest a slight correction or

another article that will clarify the much misunderstood subject of skidding and traction on snow and ice. I refer to page 23 of the July '56 issue and the following statement: "Special treads for rural use in mud, sand and snow are worth their price (tire chains have destroyed tires on our test cars in as little as 200 miles). These special treads are poorly suited to normal roads but near-perfect for their tasks."

In the interests of traffic safety, I must sincerely question the "near-perfect" statement and other implications. We recognize that some special tread tires do provide some additional traction under certain conditions, but they are not "near-perfect." The report of the Committee on Winter Driving Hazards of the National Safety Council gives the starting and stopping ability of special tread tires under winter conditions. The actual data show some improvement of special treads over normal highway treads but the improvement does not result in "near-perfect" performances when compared to the performance of tire chains.

More than a half million miles of the tire chain tests have proven that properly applied and properly used tire chains do not damage tires. These tests also have proven that improperly used tire chains ruin tires.

W. B. Lashar, Jr.  
The Chain Institute, Inc.

York, Pa.

#### WHOSE WAS FIRST?

Gentlemen:

I ran across the meanderings of an auto enthusiast in the September 1956 issue: Mr. John O. Montgomery claiming hardtop priority for the 1947 Town and Country. For the elucidation of those interested, the first and only hardtop convertible manufactured was the 1940 Mercury. This car was literally a



convertible from the window moldings downwards, the windows had the stock convertible's chrome-edged glass and the seat was also the stock convertible's narrow type, which on a rag top accommodates the mechanism for lowering the top. It also had the reinforced frame used on Merc rag tops of that year.

All so-called hardtops that came after this model can be considered rank imitations, since they did not use actual convertible bodies.

Lester E. Johnson  
Mexico, D.F.  
—*You're wrong, Señor! The Mercury Division says their car was "a close imitation of today's hardtop, but the B-post (between both side windows) was still there when the windows rolled down." Anyone else want to argue?—Editor*

## AUBURN

# TRIPLE ELECTRODES are not guaranteed for life!



You know as well as we do that no spark plug can be honestly guaranteed to last the life of your car. We make no such ridiculous claim for Auburn Triple Electrodes.

We do say that you may expect their efficient life to be as much as double that of other plugs. "Alloy #524," Auburn's new high temperature, corrosion-resistant electrode metal, is practically impossible to burn away in any engine. Concave triple electrode construction, with 12 sharp sparking edges, reduces sparking voltage, gives you longer "new plug" performance.

And all the time you use them, efficient aircraft-type triple electrode geometry gives you more positive ignition, with worthwhile increase in engine power and gas mileage.

AUBURN, A MAJOR MANUFACTURER OF QUALITY SPARK PLUGS SINCE 1910, INTRODUCED ITS CONCAVE TRIPLE ELECTRODE PRINCIPLE IN 1953. TWO FINISHES — TC-3 BLACK, AND CHROME. SOLD ONLY THROUGH DEALERS. IF YOURS CAN'T SUPPLY YOU, SEND US HIS NAME.

**AUBURN SPARK PLUG CO., INC.**  
**343 York St. Auburn, N.Y.**

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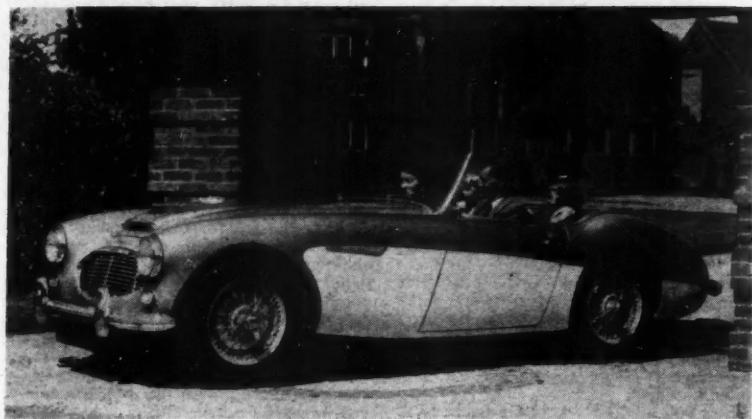
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## FROM ABROAD FOR '57

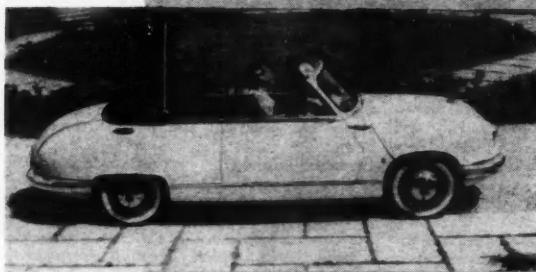
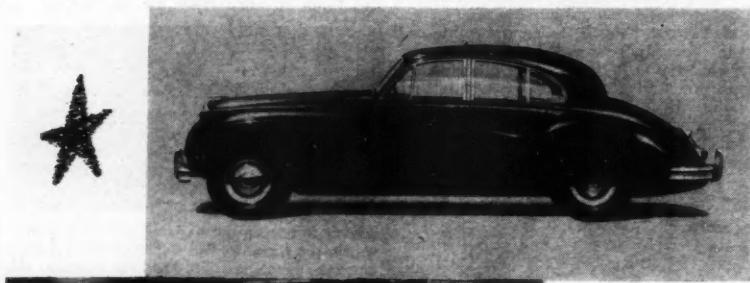


Here's the '57 Austin-Healey 100, with overhead valve six-cylinder engine (3.125-inch bore, 3.5-inch stroke, 2639 cc or 161 cu. in.). Twin S.U. carbs and compression of 8.25 to 1 give 102 horsepower at 4600 rpm. Four-speed gearbox has optional overdrive. Wheelbase is 92 inches, weight (without four riders) 2435 pounds.

The de luxe Mark VIII Jaguar has a dual-range Borg-Warner automatic, two-tone paint and interior, walnut picnic tables, and new grille.

Panhard's Dyna shows effect of new Citroen affiliation in hydro-pneumatic front shocks. Crankshaft of flat twin runs in roller bearings. Convertible is new.

Rootes took over Singer, will bring out new Gazelle in sedan and convertible. Single overhead camshaft engine has 52.5 horsepower. Chassis is like Sunbeam Rapier.



GORDON WILKINS





More road horsepower for hill climb! Bob Unser sets a new record in 1956 Pikes Peak Hill-Climb Race in car powered with a Jaguar engine and Champion spark plugs. Champions give him more power in his family car, too.

## New Champion spark plugs can increase road horsepower by 24%!

*Tests show new Champions can give you an immediate boost in road horsepower if you have driven about 10,000 miles without a spark plug change*

Whatever make of car you drive, you'll be amazed at the difference in performance a set of new 5-rib Champions can give you.

That difference has been proved *conclusively* in tests by independent engineers. When they put new Champions in cars whose plugs had gone 10,000 miles or so, there was an *immediate* increase in road horsepower — the real power actually delivered at the rear wheels! *The average gain for all cars tested was 24%!*

There never has been a spark plug to match these new 5-rib Champions! Replace your old plugs with Champions today! You'll feel the difference *at once!*



New Powerfire electrode stands up better in today's engines. Photo shows how ordinary electrode (left) burns away. Champion's Powerfire electrode (right), after identical use, is still good for many more miles of powerful, full-firing performance.

**CHAMPION**

LOOK FOR THE 5 RIBS

# SPOTLIGHT

# ON DETROIT

## THE FULL INSIDE DOPE ON STUDEBAKER-PACKARD



by Don MacDonald

**S**TUDEBAKER-PACKARD CORP. has been under medical care now for a number of years. The first symptoms of illness occurred when they were separate entities. The cause, in both cases, was a complex of slipping sales and high manufacturing costs—which was primary has never been determined.

**MANAGEMENT OF PACKARD,** whose license to practice industrial

that the Studebaker inter-plant telephone directory never caught up with the influx. As can be imagined, many old-time Studebaker executives of all echelons left with nothing to show for their years of service but a terminal paycheck.

**PACKARD CAME FIRST** in the new combine. Studebaker's Paul G. Hoffman was relegated to the innocuous chair-

forthcoming from the usual channels since his company was already in hock to the hilt—a debt premised on a cure that obviously didn't work. The "full-line" company seemed to be the province of those who had the capital.

**STUDEBAKER'S PERCENTAGE OF INDUSTRY** during the spring of 1956 was 1.58, a figure which—unencumbered—should have showed that division a profit. Then came a series of awful-sounding financial reports. Sales fell off with shaken public confidence. Then came talk of the Curtiss-Wright merger. This talk proved to be fact.

**C-W PRESIDENT ROY HURLEY arranged** a management advisory contract premised on use of two S-P plants (one in Utica, Mich. where Packard engines were built and the other the Studebaker truck plant in South Bend, Ind.) for production of defense materials ordered by the sympathetic Eisenhower administration. This unit of the merger is the now-healthy Utica-Bend Corp. The antiquated Packard quarters on Detroit's Grand Blvd. (so dilapidated that a one-ton fork-lift truck was not allowed to operate above the first floor) are now being sold for warehouse space, presumably for storage of items that do not weigh significantly more than a carton of Kleenex.

**ALL CAR PRODUCTION** will be centered in South Bend, headed by an amazingly patient man named Harold Churchill. Churchill, a Studebaker engineer with a quarter-century of longevity, is still famed for his invention of the overdrive transmission. During the post-war decade he was Studebaker's efficient chief engineer, and Jim Nance after the merger kept him on as the new Mrs. Packard's chief housekeeper.

**CHURCHILL'S REWARD** for patience has been Jim Nance's failure. Clearly divorced, with no alimony to worry about, he has very practical ideas about S-P's future. In an exclusive interview, he frankly outlined to us what he would



For those of you who may not believe that there will be a '57 Packard, here is a view of a group of S-P dealers at a meeting where the new models were displayed.

medicine had just been revoked by revolting stockholders, called in a new group of "doctors," headed by James J. Nance. He brought with him a record of miracle cures in the washing machine industry, and to this brew added a formula involving marriage of two sick corporations to produce one healthy couple.

**EVEN BEFORE MARRIAGE**, the healthier of the two, relatively speaking, was Studebaker. After scooping the industry with the first all-new postwar car (excepting an all-new company—Kaiser), her profits were fat for a year. But by resting on her laurels, the bride lost the bulk of her dowry, so the resulting wedding had the atmosphere of a skeet range. Nance's whiz kids moved to South Bend in such large numbers

manship of the board of the combined corporations. The newest of the cars to appear in catalogs of the "fourth largest full-line producer in the industry" bore Packard nameplates. Sales-worthy engineering innovations, such as the torsion-bar suspension, were reserved for Packard. Automotive writers were regularly invited to hear optimistic Nance speeches, but they also had to print the financial reports as they were issued, and it soon became apparent that "cures" capable of producing miracles in the washing machine industry produced nothing but a negative response in the automotive patient, possibly because of an entirely different basal metabolism.

**NANCE STROVE DESPERATELY** to obtain new financing, but none was

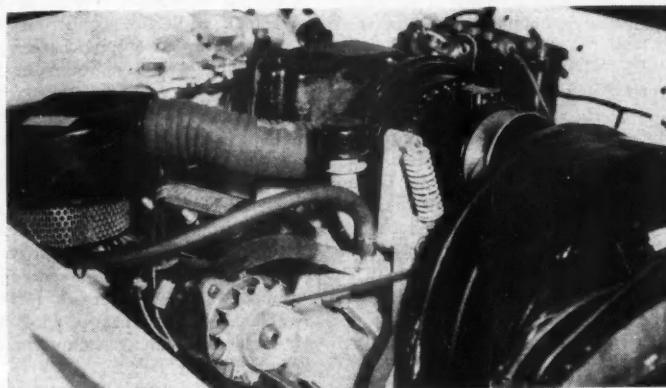
tell his dealers and the public about his plans for 1957. His words make sense.

**1.58 PER CENT OF THE MARKET** means a Studebaker volume of 150,000 units, predicated on a generally accepted 1957 volume of 6½ million vehicles. This is an overall figure, including Studebaker trucks, export sales of both cars and trucks, and carrying through with a 1957 Packard (more of this in a moment).

**OBVIOUS ECONOMIES** are already being carried out. Nance men are being subjected to a clean sweep down, fore and aft. Most, including Nance himself, have conveniently quit. The California assembly plant, a luxury affordable only by the Big Three, has been declared surplus. Parts warehousing of Detroit-era Packard components has been moved to

**CHURCHILL ADMITS** that there will be sales resistance to his moderately face-lifted 1957 products. Studebaker will headline a supercharged Hawk (see photo) and the 1957 Packard will obviously be a car aimed at keeping the name alive. We have seen it and feel that it will give good value for the expected price. For evaluation of the future, a little time must be allowed to effect production of the selective, diversified product that is the basis of the Churchill-Hurley formula for success. The trade paper, *Advertising Age*, spells it out when it quotes S-P as aiming at a "non-mass buyer" market.

**HAROLD CHURCHILL** is a relaxed man; when he talks to you, his feet are invariably up on his desk. We are both chain smokers, so much of the interview was marked by juggling of



Studebaker-Packard President Harold E. Churchill informs us that this McCulloch supercharger will be standard equipment on the '57 Stude Golden Hawk Sweepstakes 289 engine.

South Bend. The two separate field sales organizations are being consolidated under new General Sales Manager Carl Revelle.

**SUCH DEALER ATTRITION** as would be expected has already occurred. The weakest members of the chain have long since left. Dependent upon Churchill and his new policies are a loyal core of 3500 independent merchants (1400 Packard, 2100 Studebaker, 700 of whom are dualed) who have every intention of staying in business. The clean-up problem is almost non-existent. No 1956 Studebaker or Packard was shipped except upon dealer order, and when we were recently in South Bend, a total of only 300 current Studebakers remained to be shipped. There is not a 1956 Packard that is not in dealer hands.

matches. After hearing about the 1957 Packard, we asked what of the 1958? With no hesitancy, he said: "Our plans are to produce the finest car in the highest price field." You can rest assured that the design will be based on the outstanding Packard Predictor show car, for Chief Stylist Bill Schmidt is moving to South Bend to be with the Churchill effort.

**TO SUM UP** the Churchill program, he plans to establish a solid niche for Studebaker-Packard. It will never be a threat to the Big Three, but will give S-P stockholders a modest dividend. With reasonable volume, Churchill figures, maybe he can give the public a better and more unusual car. Merchandising of Daimler-Benz products is definitely in the wind, but "that is Roy Hurley's baby."

*continued*



"Serious thought is being given to dropping the Continental."

TRUE—It is being thought about, but that doesn't necessarily mean it will happen. Sales have been disappointing, but look for a '57 model very much like the current one.

"Foreign manufacturers are learning that U.S. buyers appreciate—and buy—sports and sports-type cars with real weather protection."

TRUE—Not only will MG (for example) feature a detachable hard top on its '57 models; there's a shapely new two-seater coupe with a big wrap-around rear window, curved windshield, and roll-up windows that should up MG sales.

"A retractable hardtop is in the offing for 1957."

TRUE—Look for it to be featured later in the year on the most popular make of car built in Dearborn, Mich.

"The automotive press in its entirety was thoroughly scooped by the degree of security surrounding a major manufacturer's forthcoming introduction of optional fuel injection."

TOO TRUE—Congratulations, Chevrolet.

"Detroit auto producers are seriously concerned that lobbying at a state and local level by anti-horsepower fanatics (including the usually well-directed National Safety Council) might be used as an excuse for the federal government to step in and levy a stiff tax on engine size."

TRUE—The recent Detroit visit of the "Special Sub-Committee on Traffic Safety of the House Interstate and Foreign Commerce Committee" brought out the top-level brass of the Big Three makers in an effort to justify the industry's current stand that performance is safety. Despite dramatic passing demonstrations in speed-governed cars, the congressmen went away unconvinced. Nor were they convinced by a Ford Motor Co. spokesman openly admitting that the 1956 advertising campaign based on safety was a merchandising failure.

Practically every engineering department has received orders to design horsepower into their next engine via the high rpm route rather than cubic inches.

## INSIDE STORY

proves all  
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When your car battery fails to last  
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The power-producing plates of this  
battery, a well-known brand, have  
worn so badly that they can no longer  
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This Exide battery, after the same  
use,\* shows practically no wear.  
Actually it went on to give more than  
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\*Society of Automotive Engineers Overcharge Life Test

The fundamental difference between  
these two batteries is in the plates. The  
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Exide batteries combat wear and keep them  
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patents now in force—221 reasons why your Exide will last longer  
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So, insist on an Exide. Don't be satisfied  
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YOU START

## SPOTLIGHT ON DETROIT continued

### THE MAN BEHIND THE NEW CHEVY

#### EDWARD N. (FOR NICHOLAS)

COLE was perhaps the only man in Detroit to be surprised at his recent promotion to general manager of GM's all-important Chevrolet Division. His record as chief engineer, first for Cadillac and then for Chevrolet, was starred by a number of historic firsts, including the original postwar high compression engine (1949 Cadillac ohv V8) and the all-new 1955 Chevrolet, the car that made driving that marque fun again. Achievements like these that color the balance sheet so solidly black are duly appreciated in GM's executive suite; the reward comes appropriately when the individual least expects it.

#### IT ALL STARTED 33 YEARS AGO

when Ed Cole acquired his first car, a 4-cylinder Saxon. He promptly converted it into a hot rod and burned up the back streets of Marne, Mich. There followed a succession of Model Ts until he enrolled in General Motors Institute, when he prudently purchased a new 1929 Chevrolet. GMI is a cooperative engineering school; the student alternates between classroom and paid work in the factory of his sponsor, which in Cole's case was Cadillac.

#### THE CHEVROLET BENEFITED

from his intimate knowledge of Cadillac engines. It soon was equipped with rocker arms from the 16-cylinder version, no less than 3 carburetors, and an exhaust system made up from a 4-inch furnace flue. Bill Burnett, now chief passenger car engineer for Ford Division but then a young technician at Cadillac with Cole, tells a story about this car that still embarrasses Cadillac's current chief engineer, Fred Arnold.

#### ARNOLD, AT THAT TIME,

was head of the Cadillac dynamometer laboratory and proud owner of one of his company's ponderous V-12 convertibles. Burnett and Cole between them maneuvered Arnold into accepting a challenge for a drag race up Clark Street in front of the plant. Both cars were super-tuned, only the Chevrolet more so. By the time Arnold had wound up his big engine and was letting out the clutch, Cole was half a block up the street. It was one of the industry's early



lessons in the fact that sheer power is not as important as power-weight ratio.

COLE'S ENERGY is such as to cause some people to wonder if he isn't hooked up to a supercharger. Neither hours nor protocol mean anything to him. If he can advance a project by grabbing a wrench, he is likely to do so. He feels the day is over when the project is done, and on many an occasion, this has meant spending the night in the plant. A typical Cole schedule is illustrated by the development of the Chevrolet V8 engine. He arrived at the plant with the assignment and some mental notes in April 1952. Completed engines that weighed less than their six-cylinder counterparts were running by fall.

#### MANY OF HIS ENGINEERING

TECHNIQUES can be applied in his new position as general manager. For example, he is obsessed with weight control, a principle quite applicable to a large corporation that over the years has built up its fair share of fat. Cost cutting is a manager's as well as an engineer's business. A long-time associate tells the story of a test trip through the Smoky Mountains with a batch of pre-production 1955 Chevrolets. Cole was late in showing up for a lunch stop. He had discovered that through an error, the front stabilizer bar was disconnected on his car. It had always been assumed by chassis engineers that a stabilizer bar was a necessary item so it was included in this design. What delayed Cole was a thorough check of the amazing fact that the car handled just as well without it as with it. Without telling the rest of the crew, he gave them each a chance to drive it on the rest of (Continued on page 15)

# **WANTED**

**Boys with brains and the urge  
to use them for the**

## **1957 Fisher Body Craftsman's Guild Model Car competition**

**\$115,000 in Awards Including**

**8 University Scholarships Worth up to  
\$5,000 and 10 Special \$1,000  
Styling Scholarship Trust Funds**

**A** LOOK at these daringly designed, beautifully finished model cars tells you the Fisher Body Craftsman's Guild Competition is a tough one.

But a glance at the awards tells you it's mighty well worth your time and skill and patience.

What's more, year after year teen-agers from all over the country come through with award-winning models.

So, if you like cars — if you have an idea how cars of tomorrow should look—and if you have the ability to get that idea — not just on paper — but into a carefully finished model — well, you're bound to be — not only a Craftsman's Guild winner — but well on your way to a brilliant future.

Your model can be a hardtop, station wagon, sports car, convertible or sedan. You can build it of wood, plaster or any other durable material. Just follow the carefully spelled out instructions in the free booklet "How to Build a Model Car."

But—this is most important—fill out the entry blank —now! For you're going to need every minute you can get to build yourself a winner before the competition closes next June.

The awards are yours for the working!



*These sleek, exciting "dream car" models are among the hundreds of entries which won their boy builders top awards in the 1956 Fisher Body Craftsman's Guild Competition.*

### **FISHER BODY CRAFTSMAN'S GUILD, Detroit 2, Michigan**

Please enroll me in your 1957 Competition. Send me, free and without obligation, the Craftsman's Guild Membership Card plus your Booklet of Instructions.

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(Print)              1st name              Middle Initial              Last Name

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(Print)

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##### **SENIOR DIVISION              JUNIOR DIVISION**

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**NOTE: Youths born in years other than those listed above are  
NOT ELIGIBLE.**  
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# Announcing...

THE DEVELOPMENT OF A  
NEW FAN-RELEASE UNIT  
THAT AUTOMATICALLY  
DISENGAGES FAN AT  
SPEEDS OVER 40 MPH!



PAT. PEND

Developed over a 5-year period,  
during which more than 500  
units were installed and used on  
cars with outstanding success.  
Thoroughly road tested.

At speeds over 35 MPH, standard automobile fans waste horsepower! The FAN-O-MATIC now makes your fan a free-wheeling unit, releasing wasted horsepower at speeds over 40 MPH

- Increases Available Horsepower
- Increases Gas Mileage
- Increases Acceleration
- Reduces Engine Noise
- Reduces Vibration

Tested and proved at Indianapolis Speedway under supervision of United States Automobile Club. Simple to install, adaptable to all cars.

Available at your garage, service station or car dealer. If your favorite dealer does not yet have the FAN-O-MATIC, ask him to write us for the name of Jobber who can supply him.



Manufactured by 2146  
**RADIATOR SPECIALTY CO.**  
Charlotte, North Carolina

Pete Molson's

## GLOVE COMPARTMENT



### GOOD NEWS FOR OILCOHOLICS

IF AN EIGHT-CYLINDER CAR used  $\frac{1}{4}$  of a drop of oil on each stroke of a piston, it would take more than 55 quarts of oil to lubricate it on a trip of 600 miles. The oil ring (as distinct from the compression rings) is a more subtle gadget than most of us realize. It must meter our oil over an enormous spread of temperature and pressure, and it must do this for an indefinite period. Neither wear, fatigue, corrosion, erosion, nor accumulation of impurities must be allowed to affect this delicate function.

This is by way of introduction to the new stainless (chrome-nickel-manganese) steel oil ring and expander assembly just announced by Sealed Power Corp. of Muskegon, Mich. Working together with Allegheny Ludlum Steel Corp., they've come up with an alloy ring that needs no further hardening after the actual forming operations, which give it its necessary spring. It also has better fatigue resistance and thermal stability. It will be available next year, so it may be worth your while to coax the old bus along for a bit if you're planning an overhaul.

### IF WINTER COMES . . .

INTERNATIONAL MOTORAMA AND MOTOR REVUE, usually an autumn bright spot in the astonishing automobile life of the West Coast, has been postponed till spring. Watch "What's Coming Up?" (in "Motor Sports") for the new date of the Los Angeles show.

### WHO'S DEAD?

THE DAYS OF THE SIX are numbered, as we stated some time ago, and we'll stick by our words; but a little-noticed summer event in the Dodge Main Plant showed plainly that time has not yet run out. It was the production of Dodge's four millionth six (the first

"NOBODY ELSE seems to have answered the Volkswagen competition, so I thought I would try," states Air Vice Marshal Donald Bennett. His first effort has resulted in the Atom (below, right), a 60-miles-per-gallon economy car available as a coupe or convertible and with your choice of four engines. Weight of the car is under 1000 pounds (the body is Fiberglas). Wheelbase is 89 inches.

All models of the Atom have air-cooled engines mounted in the rear, driving through a three-speed transmission and coil-spring swing axles. The Mark I engine is a single cylinder, four-stroke, overhead valve, 15.3-cubic-inch mill developing about 11 brake horsepower. The similar Mark II engine has a displacement of 21.4 cubic inches, with about 17 bhp. The Mark II-A engine is a two-

was built in 1927). To be sure, production is 'way down from the high of 320,000 Dodge sixes back in 1950. It was 37,000 last year and is less than 11,000 for the first five months of '56. Who buys the sixes? Sophisticated New Yorkers, somewhat to our surprise, have kept sixes at 26.7 per cent of all cars sold in that area. In Philadelphia, Boston and Chicago they account for 10 per cent.

### BLACK IS THE COLOR . . .

"THIS RETURN TO ELEGANCE not only means blacks and grays. It means that most colors will be more subtle and quiet." So said Virgil M. Exner, Chrysler's director of styling, back last April. And now, after falling to an ignominious ninth place in 1954, black is in the lead again. It will never look better than on some elegant '57 cars we stole a look at the other day. When they come out from under wraps, Mr. Exner may well take an even deeper bow than he did two years ago.

### HAVE AT YOU, SIR!

"I HAVE THE HONOUR to wager on behalf of the Royal Aero Club," the courtly letter began, "the sum of 50 pounds sterling [\$140] that an aeroplane will carry two people from Lands End to John O'Groats, and back to London, and in doing so, will use less petrol than a motor car carrying two people between the same points."

"I am, Sirs, your obedient servant,  
S. Kenneth Davies,  
Chairman."

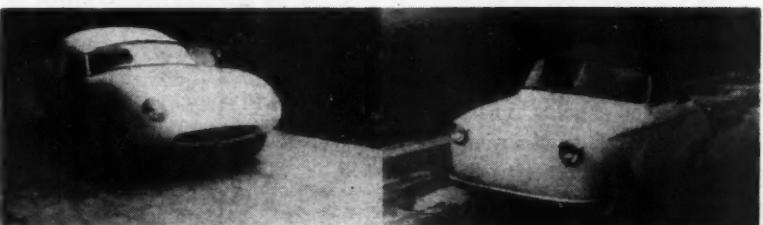
Officials of the British Automobile Racing Club, to which this sporting challenge was addressed, have responded with (we imagine) dignified haste. A Triumph TR-3 and an Auster J-4 with Cirrus Minor engine have been selected as comparable machines. We'll have to wait till next month to tell you how it came out.

### NUCLEAR POWER

cylinder, two-stroke, rotary valve unit of 19.7-cubic-inch displacement, developing almost 15 bhp. The biggest of the Atom's engines is the Mark III, a two-cylinder, four-stroke, overhead valve model which produces 35 bhp stock, or 40 bhp with a special high-compression head. Prices, in England, range from only \$726 to \$929!

The Electron (left) is the sports car version, with a claimed top speed of 110 to 115 mph. The Fiberglas body is different from the Atom's, and the engine is a water-cooled Coventry Climax four-cylinder unit developing 67 bhp at 6000 rpm from only 67 cubic inches. The transmission has four speeds forward, 15-inch wheels are used, and the dry weight is only 1090 pounds.

Address of the company is Fairthorpe Ltd., Chalfont St. Peter, Buckinghamshire, England.



## SPOTLIGHT on DETROIT

continued from page 12

the trip, and no one noticed any difference whatsoever. Thus the front stabilizer bar was left off all 1955 and 1956 Chevrolets, saving the company about \$2 per car or over \$2 million the first year alone. Cole could have quit right then, and GM certainly would have been obligated to retire him to very green pastures.

**IT IS A HUMAN** and completely understandable situation that people who do things, accomplish really big things, also are subject to error. Ed Cole is the first to admit that in getting things done he has made mistakes, costly mistakes. Nevertheless, his account with General Motors is solidly on the credit side.

**TYPICAL COLE PRONOUNCEMENTS,** before and after becoming general manager:

**ON RACING:** "They used to race chariots in Rome. There has been no change in competitive instincts. Man's inherent makeup is to be first. Let's cater to it, but perhaps we should now talk about it in more controlled areas."

**ON CHEVROLETS:** "Nothing is more important than product. We must always have an outstanding product. That is my first interest. With a good product, the sales force is automatically inspired to set new records for Chevrolet."

**ON ENGINEERING:** "An engine must be made to hang together under any circumstances."

**ON THE DIVISION** when he went to it in 1952: "The climate was right for an all-new concept of a car."

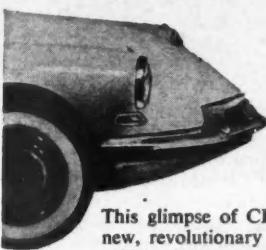
**ON YOUTH:** "I personally read all letters written to this company by those who are obviously under 21 . . ."

**ON HOBBIES:** "I fish for relaxation." (Ed. comment: the fish probably compete for his bait.)

**ON FAMILY:** "My boy (19 years old) is a top engineering student at the University of Michigan. He loves cars. I have discouraged him from getting interested in fixing up an old car. He should think only about future cars. Therefore I bought him a new Chevrolet so he could go on from there."

**MAY WE MAKE A PREDICTION?** Ed Cole, if you can judge by past performances, will probably become the youngest (he's now 46) president of General Motors in its history.

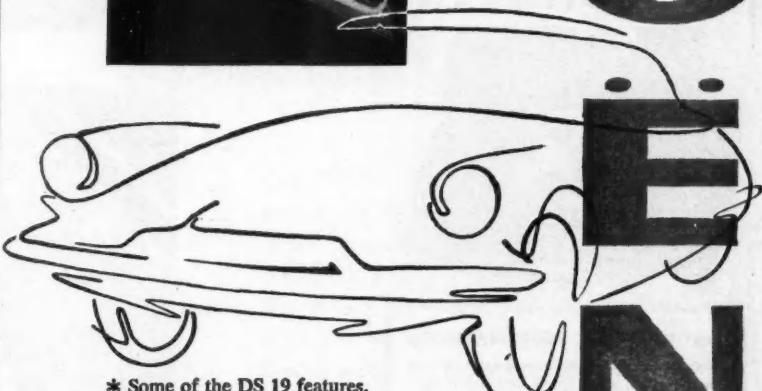
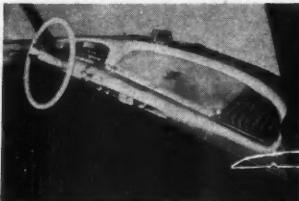
—D.M.



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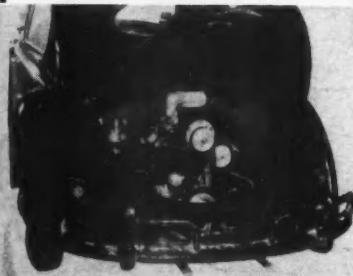
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**G**ORDON BUEHRIG, famed for creating the coffin-nosed Cord, has a long history of bucking the arbitrary distinction between closed (defined as hardtop or sedan) and convertible body styles.

His postwar Tasco (small photo) featured removable, transparent roof sections. The car never hit production, so the popularity of the idea (fully covered by design patents) could not be tried.

We recently spent a weekend with Buehrig's personal T-Bird, which features as flexible a covering as we have encountered. Cleverly inset into the standard Fiberglas top is an option of clear Plexiglas or opaque panels,

removable at a flick of the wrist. The opaque panels are fashioned from the same material originally cut from the top. The clear panels, of course, have to be made up separately. Both sets can be carried in a neat case that fits behind the seat and both, when in place, are completely leakproof. When the panels are off, you have the effect of a semi-convertible (bottom photo) and, of course, the whole roof can be removed in the standard T-Bird manner.

Persons who are seriously interested in obtaining manufacturing rights should contact Mr. Buehrig at 2200 Belmont Ave., Detroit.

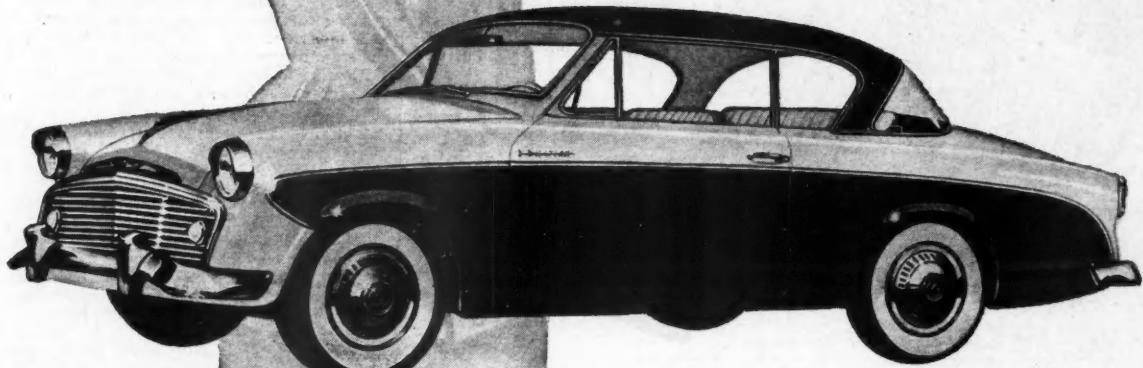
—Don MacDonald

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## car owner's



## LIBRARY

### SOUNDS OF SEBRING

A 12-inch LP record of the Sebring 12-Hour International Sports Car Race. Produced by Riverside Records, 418 W. 49th St., New York 19, N. Y. \$5.95, ppd.

**I**N SPITE OF a curiously negative attitude on the part of the "peasantry," all motor enthusiasts know that the sound of a highly tuned racing engine playing up and down its range of revs is one of the most exhilarating, heart-lifting and beautiful sounds of our technological age. Many private cuttings have been made of this mechanized music by and for small groups of fans, but this new record is the first professional attempt.

Side one includes no motor noise, but is confined to a general description of the affair and interviews with the drivers. Many of these are naturally interpreted, but it is quite fascinating to hear the actual voices of these motoring paladins and to elicit an idea of their diverse characters.

The high-pitched voice of the grand master, Fangio, is translated for us but still conveys something of his curious personality. De Portago's excellent English, lazy intonation, and aristocratic candor make possibly the best impression of any driver.

The finest sound on the platter comes at the beginning of the second side, a beautifully "Dopplerizing" 1100-cc Lotus-Climax. Its tone is not intruded upon by any conflicting racket, as are most others, and its clear, healthy tenor is a joy.

The race itself is well covered, though the narration includes a presumably unavoidable lot of misinformation, especially as to who is driving a given car at a given time. Castelotti (who Fangio himself admits was fully as necessary to the victory as the master) is totally ignored until the closing driver-stop.

However, these criticisms are minor and do not really impair the pleasure of being able to recreate a great experience. A precedent has been established which may increase everyone's enjoyment of motor sport. —L.T.

### USED CARS—A GOLD MINE

by Eric Cassirer

Published by Vantage Press, Inc., 120 West 31st St., New York 1. Available in local bookstores. \$2, ppd.

**E**VERY PERSON who buys, sells, or owns a used car should take the time to read this book. If you're a used car dealer or salesman, this short collection of tips may well show you the way to increased sales and profits. If you are contemplating the purchase or sale of a used car, this collection of wily tricks and crafty procedures may forewarn or merely frighten you. In a sometimes amusing, sometimes provoking style, the author exposes the many facets of the used car industry, displaying a profound knowledge of human psychology in the process. Some of the practices might be labeled barely ethical, but the most accurate label is P. T. Barnum's famous statement, "There's a sucker born every minute." For the modest cost of the book, you can learn how to make sure of it, or possibly avoid becoming one yourself.

—P.S.

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# FORD



*Fords expand in number and size, with 19 models in three different lines*

IS THERE SOMETHING really new? Yes—Ford for '57! It's low, wide, handsome, and a completely new car from the ground up—and in this case not very far up! Fairlanes and Customs are both less than 57 inches high, or just about eye level for a tiny five-foot girl! The three basic models—Fairlane, Custom, and Station Wagons—are long, too—up to nine inches longer than the '56 Ford.

One of the newest features of the '57 Ford is the fact that for the first time in its 53-year history, the Ford Motor Co. will be producing 19 models in three different basic sizes, each with its own body and chassis. The largest, the Fairlane and Fairlane 500 (luxury job), are built on a 118-inch wheelbase, are nine inches longer and four inches lower than last year's models. Station wagons are built on a 116-inch wheelbase, are 3.5 inches lower, and almost six inches longer. Customs and Custom 300s have a 116-inch wheelbase, are over three inches longer and nearly 3.5 lower than the '56s.

Our first look at this '57 Ford made us wonder what made it seem so different from any Detroit stock design we had seen before. As we walked closer, our wonderment increased because the car (a Fairlane) seemed to get lower and lower. Standing right beside it, the only comment we could make was, "We don't believe it." Because of the excellent body proportions it just seems farther away than it actually is.

Low overall height, along with proper road clearance and satisfactory interior proportions, is hard to accomplish. Ford surmounted this problem by redesigning the frame to accommodate the passenger section within the side rails. In effect, the rails become side bumpers that protect the passengers. Heavier stock here, along with tubular crossmembers, makes the new frame 27 per cent more rigid and saves two inches in height.

A tapered driveshaft and redesigned hypoid rear axle and 14-inch wheels (15 inches in '56) reduce the height another two inches for a total of four inches from ground to top. All of this

**AN MT  
RESEARCH  
REPORT**  
*by John Booth*

lowering is without any sacrifice to the interior proportions.

Our next reaction to the '57 Ford (and probably yours) was whether or not it would be hard to get in or out of. This was, and still is, a pleasant surprise. It's just about as easy as the '55 or '56 because of the larger access through the doors. The forward-slanting windshield post cuts into the door opening about one inch more than before. We were afraid the exceptionally low top line would cause us some trouble, and it did take a bit more stooping. Once inside, the feeling of lowness was gone (until we parked next to a '56) due to the spacious interior. In fact when you're seated, everything seems rather conventional, aside from a general freshness of design.

#### Inside the Ford

Other new features that become apparent are the deep-dish safety wheel (standard equipment) that is smaller and considerably lower; a repositioned front seat to take advantage of the new angle; and, a new panel with instruments that are easily read, even in bright sunlight. We are especially pleased with the excellent upholstering detail and hope this is carried out in their production models.

Twelve solid and 19 two-tone body color combinations dictate a wide choice in upholstering motif for individual taste; the new Ford line boasts 37 different fabric-color upholstery combinations. Seat cloth is nylon backed with latex for longer wear. Solid vinyl is also available in crush grain or pleats. Floor covering is color matched in vinyl, looped rayon and ribbed linoleum, the latter for station wagon models.

#### Engine Choices for '57

Three V8s and a "mileage-maker" six are offered for '57,

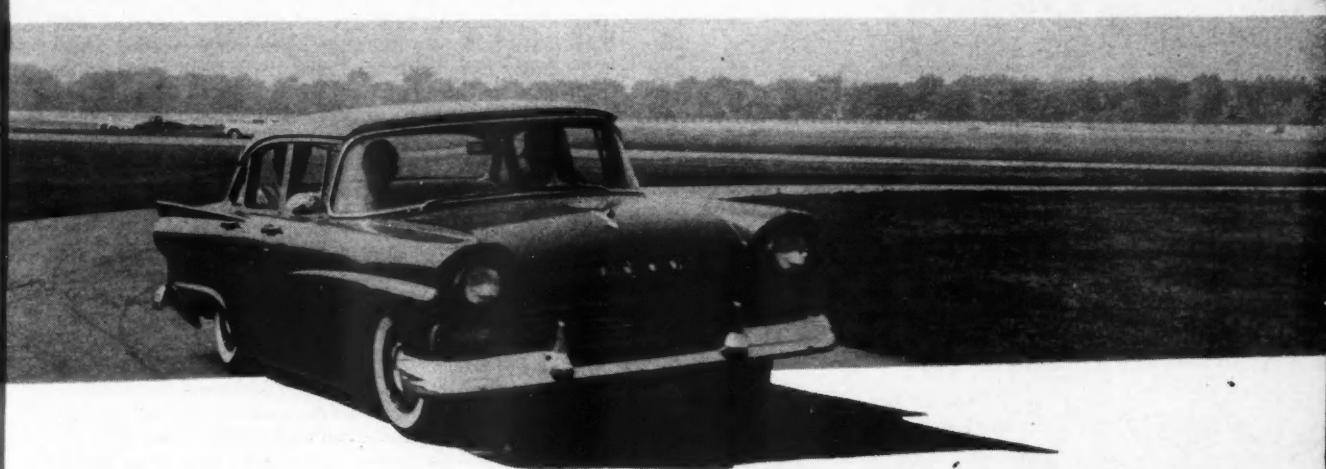
When it's used with Fordomatic it's rated at 212 horsepower at 4500 rpm; with a standard box, it rates at only 206. A two-venturi carb is used, regardless of transmission. This engine is standard on the Fairlanes and station wagons.

The little brother of these power mills is the 190-horse V8 that's used in the Custom and Custom 300 series. It's the smallest V8, being 272 inches, with 3.62 bore and 3.30 stroke. Compression ratio is 8.6 to 1. A double-barrel carb is used.

Though there probably are fewer and fewer buyers looking for economy, Ford still provides a 223-cubic-inch six that gives a healthy 144 horsepower at 4200 rpm. It is available on all models.

The new V8s sport a larger intake manifold, bigger and higher-lifting intake valves, and a recontoured camshaft. Each is equipped with a new dry-type carburetor air filter (see Lincoln story, page 26) and redesigned carburetors for more efficient fuel distribution.

The new exhaust system, on all but the 245-hp models, combines an exhaust pipe extending back from each manifold, then



each with major engineering changes, including higher compression ratios, freer breathing, new ignition and better exhaust flow.

Top muscle man of this group is the Thunderbird Special V8, available as an optional engine in any model; it is *not* standard on any Ford. It's a big 312-cubic-inch engine, with 3.80-inch bore and 3.44-inch stroke. Using a compression ratio of 9.7 to 1, it unleashes 245 hungry horses (at 4500 rpm) that are fed by a special low silhouette four-venturi carburetor.

Next in line is the Thunderbird V8, a 292-cubic-inch (2.75 bore and 3.30 stroke) engine with 9.1 to 1 compression ratio,

through a "Y" and ending in a single muffler. The complete dual setup is still retained on the Thunderbird Special engine and is obviously more efficient.

#### Taking a Test Drive

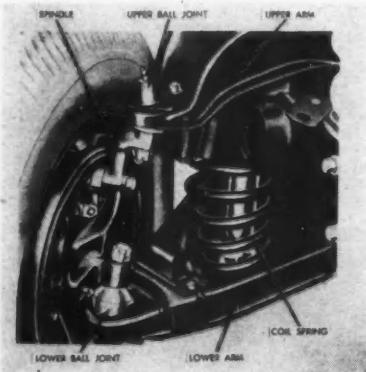
Our test car—a Fairlane sedan—was an engineering prototype with standard shift and the 245-horsepower Thunderbird Special V8. All acceleration runs were made with stopwatch and standard speedometer. This should be sufficient to give a general idea of what to expect in this hottest of the Ford line; we will

FORD

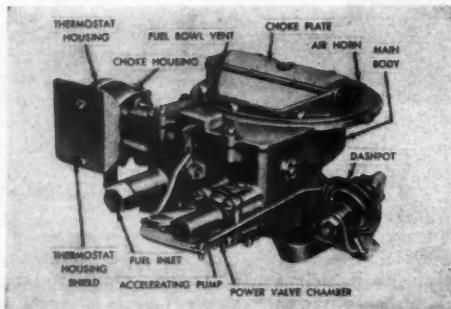
'57



This is Ford's Country Sedan, one of five wagons in the 116-inch wheelbase station wagon line. Available in nine- and six-passenger sizes, it has a self-raising liftgate and comes with the 212-hp V8.



New swept-back ball-joint suspension gives increased steering stability. Rubber-mounted suspension arms reduce road shock and vibration.



All '57 Ford engines have a newly designed carburetor which features better fuel distribution and reduced height to accommodate ever-lowering hood lines.

verify these figures in our full-scale road test in the near future.

Using our stopwatches and standard speedometer, we needed only 3.4 seconds to indicate 30 mph from a standing start. From 0 to 60 mph took 9.5 seconds (two seconds quicker than last year's Fordomatic-equipped test car), which is real rapid time in anyone's book. We had quite a problem preventing wheel-spins during these acceleration runs. If you really tromp on the accelerator (standard shift box) you will just sit there and burn rubber. We had to start rather conservatively and then bend the floorboard with our heavy foot.

At cruising speeds, 30 to 50 mph required 3.7 seconds (5.3 last year) and 50 to 80 took only 9.8 seconds (13.3 last year). As Ford says, "We're not in the racing business—but . . ." Still, Bonneville at presstime was the scene of new record attempts by Ford. A '57 Ford had made a two-way run of over 130 mph, and after 23 hours another one was averaging 111.2 mph!

#### And What About Roadability?

With a car as new as this, we were more than anxious to see what kind of roadability was built into it, especially in view of an obviously lowered center of gravity. We started our roadability test on exceptionally rough roads and noticed a definite improvement in spring and shock action over the '56. It is fairly softly sprung, but good shocks tend to control any baby buggy motion. Road noises are very effectively damped, as is road shock transfer to the steering wheel. Live rubber mounts are used at 20 places between the body and frame.

On rather smooth roads, we noticed a minimum nose dip when braking. The brakes seemed smooth and positive, although we will have to wait until later tests to determine their fade resistance factor. New outboard-mounted rear springs are two inches longer than on the '56 model. This extra length is ahead of the rear axle and materially aids in reducing front end dive on quick stops.

A redesigned ball-joint front suspension boasts single-unit upper and lower arm construction. Hinged with live rubber bushings, these arms are swept back in a modified trailing arm

## FAIRLANES

Wheelbase—118 inches  
Overall Length—207.7 inches  
Overall Height—56.2 inches

245-hp  
V8  
optional

212-hp  
V8  
standard

144-hp  
Six  
optional

## STATION WAGONS

Wheelbase—116 inches  
Overall Length—203.5 inches  
Overall Height—58.6 inches

245-hp  
V8  
optional

212-hp  
V8  
standard

144-hp  
Six  
optional

manner. Wheel motion is now upward and rearward which, in effect, causes the wheel to be pulled rather than pushed over a bump.

Violent cornering brought out the advantages of a low center of gravity. This new Ford really sticks. Body lean is modest, and with the built-in oversteer, you get a feeling of confidence in the car's ability to do your bidding. Not that you can't break it loose; we did several times, but it broke reluctantly and a quick correction of the wheel put it back in the groove.

Steering is positive with about average resistance without power advantage (as our test car was). We liked the feel of the smaller deep-dish steering wheel, and the driving position, with its conduciveness to good control. The four turns from lock to lock could probably be reduced to  $3\frac{1}{2}$  turns without creating undue turning resistance. Steering ratio is up from 25.3 to 1 to 27 to 1, "for easier turning," says Ford, but we feel the smaller (14-inch) wheels, with broader rims and more tread surface on the road, may have had something to do with the change.

The Ford for '57 should be a most interesting car to watch. There are plenty of Ford fingers crossed and they'll remain so until an upward sales trend is established. No-one *really* knows why the '56 Chevy wound up so far ahead, but Ford hopes to close the gap with their '57 offering. They think you will like it. We think you may, too.

—J.B.

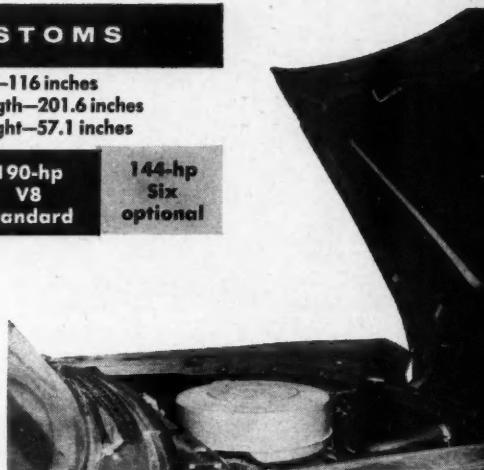
## CUSTOMS

Wheelbase—116 inches  
Overall Length—201.6 inches  
Overall Height—57.1 inches

245-hp  
V8  
optional

190-hp  
V8  
standard

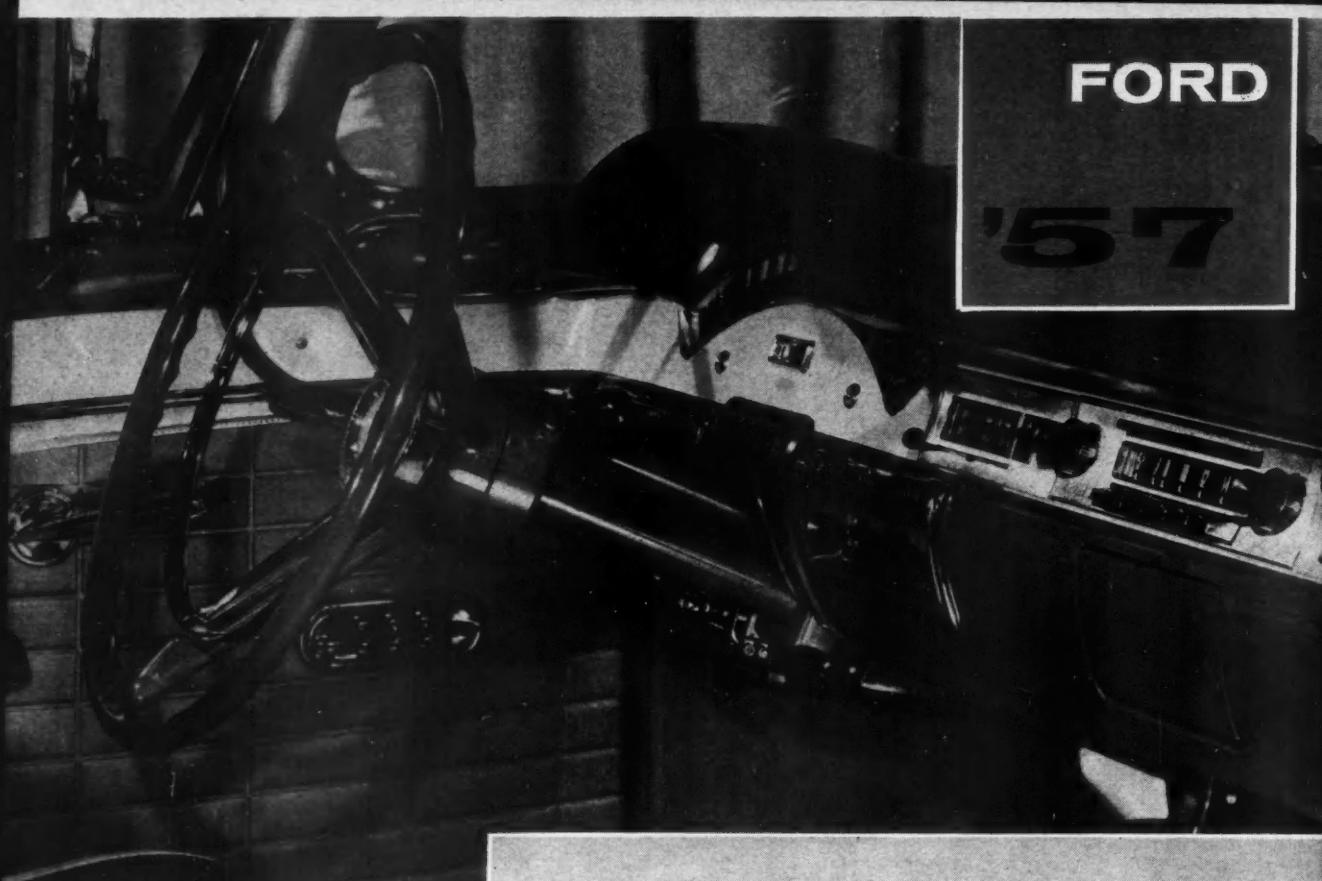
144-hp  
Six  
optional



No matter which of the four engine options Ford buyers pick, they'll get at it through a rear-opening hood.



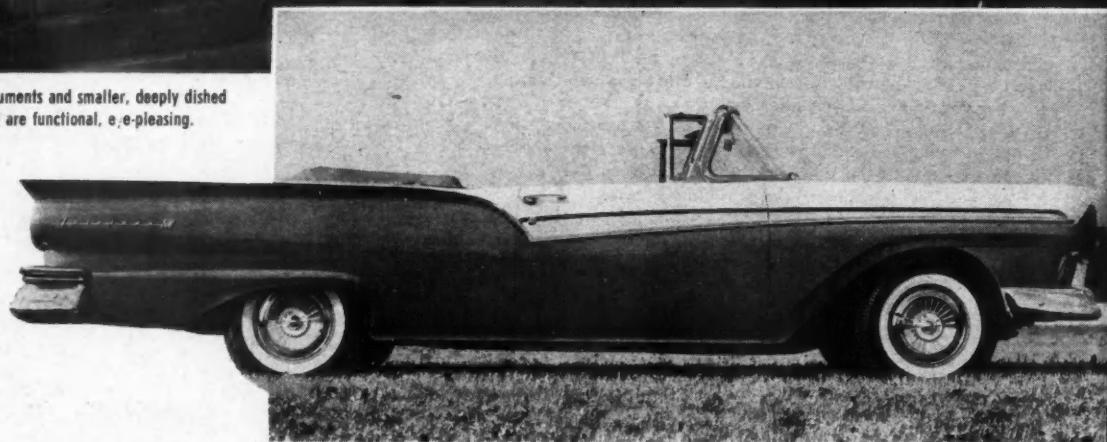
Rakish fender fins and enormous tail lights dominate the newly designed rear panels and massive bumpers.



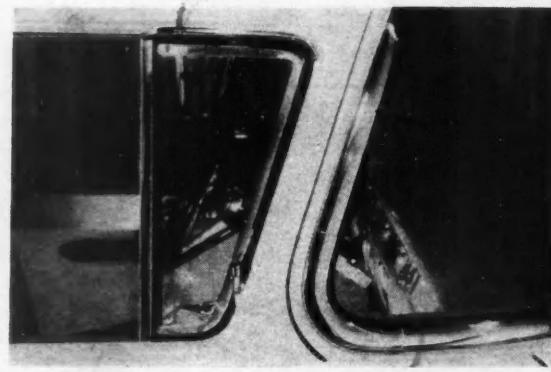
FORD

'57

Recessed instruments and smaller, deeply dished steering wheel are functional, e.e-pleasing.



Above, the '57 Ford Fairlane 500 convertible.



Wrap-around windshields are wrapping even more, but have same amount of distortion. Cornerpost now has a reverse slant.



Though the centerpost remains, '57 Ford Fairlane four-door sedan, top photo, shows definite hardtop influence.

The true hardtop just below is one of the new Fairlane 500 series, nine inches longer and four inches lower than '56s.

## MT DETROIT INTERVIEW:

**B**EFORE becoming Vice-President, Director of Styling, for the Ford Motor Co. in May of 1955, George Walker was an internationally known independent design consultant with headquarters in Detroit. His clients ranged from an office machine manufacturer who wanted an adding machine designed to look like it was doing 80 mph while sitting on a desk, to the Ford Motor Co. itself. Since the first postwar change on the '49 models, Walker's influence on Ford products has been easily traceable.

Jolly, slightly rotund, in his middle 50s, he is usually relaxed and always easy to talk to. He has a knack for translating the somewhat esoteric jargon of the stylist into Basic English, but those under him in the various studios do not doubt for one minute his complete dedication to the unbelievably complex job of styling automobiles.

The all-new 1957 Ford, to be followed later in the season by the radical 1957 Mercury, are the first products which can be termed completely "Walkerized." They

are evolutionary in the broad sense that they still look like automobiles as we know them, but not Fords and Mercurys. Swinging at the GM philosophy of evolution for its own sake, Walker flatly states that "Ford is an individual company, an independent. We will give the public products that we know they will like. This does not mean slavishly patterning a new model after the previous one."

Walker becomes more animated as he talks: "Look at this car (a '57 Ford). Look at the rounded highlights. I think we have here a new concept of crispness. The car definitely has a feeter, lighter, faster line. See how the flair balances out both front and rear. Look at the fins—I don't like the word fin—they should be called relief from severity or something—but see how they have a dihedral effect, make the car look wider instead of higher. Later, maybe we will drop them on their sides, and after that, there's nothing left to do but leave them off."

"Good simple lines are the best expression of forward motion. With sculptured sheet metal, we can try to lead the public away from chrome. I admit this makes a car harder to facelift, but I think we've learned our lesson from not enough change. And how can you call this Ford a 'small' car? People want a Lincoln at Ford prices and we have to give it to them."

Here, Walker stopped short, for the inevitable thought of what would happen to Lincoln (or Cadillac) when Ford (or Chevrolet) finally caught up, was not a topic entirely suitable for this discussion.

—Don MacDonald



**George W. Walker**  
**Director of Styling**  
**Ford Motor Co.**

# '57 LINCOLN

AN MT  
RESEARCH  
REPORT

by John Booth



William E. Burnett  
Executive Engineer  
Ford Car Engineering  
Ford Division

## MT DETROIT INTERVIEW:

He received his early training with Chevrolet's Ed Cole (see page 12) at Cadillac under Owen D. Nacker (retired). Nacker, nicknamed the Sheriff because of his affinity for a disreputable Stetson which he reputedly wore even in the bathtub, was famous for his ability at ride evaluation, a seat-of-the-pants procedure.

**N**O ASSIGNMENT is more calculated to please a working engineer than to be told to build a car that is new from tire tread to roof. For an executive engineer in charge of Ford passenger car design like big Bill Burnett, this opportunity has attained a frequency of once every two years. It means 16-hour days and aspirin by the gross, but he thrives on the routine.

Burnett is one of those rare engineers who are completely articulate. He is a popular and sought-after speaker on the SAE circuit, and the captive audiences at these affairs brighten visibly when he ascends to the lectern. Although now in charge of all phases of Ford car engineering, Burnett is primarily a chassis and ride specialist.

Bill Burnett is perhaps most pleased that he was able to engineer the new car on two wheelbases. While the decision stemmed primarily from sales (to give Ford a broader coverage of the market despite the forthcoming "E" car), he engineered into the longer of the two a ride which he will stack against anything being built today. What he calls the "pendulum effect" (a system of forces produced by the relationship of body overhang to the wheelbase) is closer to the ideal than ever achieved in past Fords.

Despite a softer ride, Burnett claims to have maintained all that was good about Ford handling, and in the past, this has been good enough to win a number of MT awards. Unlike his contemporaries in other Ford divisions, he favors building in a slight amount of oversteer, that characteristic which will cause the rear end to break loose before the car itself during hard cornering. This, coupled with a reasonably soft ride, he says "is the type of control best adapted to universal use."

The recent pilgrimage to Detroit of a group of safety-minded congressmen has scared everybody concerned with putting more power under the hood, and Burnett is no exception. Nevertheless, the company and its divisions have no intention of keeping mum about fast-selling horsepower. Ford offers the widest spread of engines of any single brand of car. There is a six, and three varieties of eights, with every transmission option on each. And there's the racing package, undoubtedly to be introduced just prior to Daytona.

—Don MacDonald

# - TOP-DRIVING U.S. CAR?



PHOTOS BY JOE FARKAS

WEBSTER defines the word *refinement* as "affectation of elegance or subtle improvements." We define the '57 Lincoln as being that which typifies refinement. From the "Quadra-lite" front end to the canted rear fender blades, the new Lincoln is chock-full of styling and engineering niceties to further enhance its foothold on the fine-car market.

Style-wise the '57 Lincoln has a new crispness to its lines while retaining the distinctive design theme that made the '56 so impressive. Engineering-wise, mechanical improvements are highlighted by more docile responsiveness and improved ride characteristics—all lending to the feeling of fine car luxury.

Interior appointments remain much the same as last year. Instruments, power window controls, wide "dual-lever" brake pedal and shift control are all reminiscent of the '56 with subtle color or trim changes that create an overall measure of "newness."

Lincoln's success with its mammoth sweep-hand speedometer has dictated a repeat in '57. Like last year, functional simplicity of the instrument panel lends an air of planned elegance that is carried out in complementary appointments throughout the interior. Innovations include repositioned inside door locks on the panel side of the window sills, which operate forward and backward, and doorhandles that slant outward and are large enough to really grab hold of. Upholstering materials (including top grain leather) are offered in many colors and textures creating a certain amount of individualism in interior selection.

The Lincoln Premiere series has as standard equipment, power seats, windows and brakes (all available as extra equipment on the Capri). New powered extras available this year operate the vent windows, six-way power seat and door locks, the latter operated from a master switch on the instrument panel.

Other extras for '57 include Adjust-O-Matic shock absorbers

and a power-directed differential which prevents the car from being immobilized when one wheel is stuck in mud or snow.

A remote control side mirror and an automatic low-fuel warning signal that flashes red when three gallons of fuel remain are standard equipment, as are the deep-dish safety wheel and safety door locks. Belts, padded instrument panel and sun visors will complete Lincoln's safety package but come under the heading of extra equipment.

Performance figures won't show any appreciable difference over the '56. Our acceleration test was made with a fifth wheel and a bank of stopwatches, making the procedure as accurate as our full-scale tests. Our best times (with or without manual downshift) were as follows: 0 to 30 mph in 4.3 seconds (about 0.2 less than last year) and to 60 mph in 11.5 seconds (same as '56).

At cruising speeds, acceleration is again in the '56 class with four seconds required to get from 30 to 50 and 12.2 seconds needed to get from 50 to 80 mph.





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## '57 LINCOLN continued



Rear quarter view is still unmistakably Lincoln. The '57, left, doesn't appear very different until you view the canted fenders from the rear.

The '57 Lincoln engine remains basically the same as last year. Horsepower has been upped from 285 to 300 at 4800 rpm and torque has been increased to 415 pounds-feet (401 last year). Cubic inch displacement remains at 368. This added horsepower was accomplished by better breathing, a new dis-

core can be cleaned by gently tapping it on a solid surface, or easily replaced with a new element which is never oiled.

Another improved item is a new full-flow throwaway oil filter. Composed of five parts sealed in one shell, it features "light bulb ease" of installation and removal. This can even be

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continued

27

For better efficiency in the new 12-inch steel torque converter, '57 Lincolns have an air-cooled oil radiator.

purposely ran afoul of the basic laws of physics, the resultant skid was easily checked and directional control regained by a quick twist of the power-operated wheel. There appears to be a deliberate attempt to compromise between oversteer and understeer.

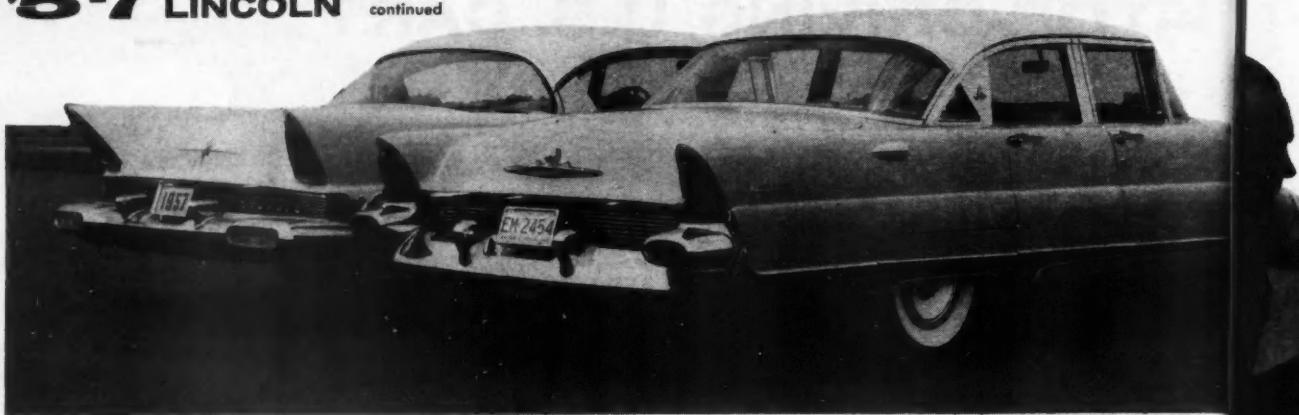
We braked and violently accelerated in several turns and noted the inherent stability that has been accomplished by careful "tuning" of the chassis. The whole car gives the sensation of being really tied together with all components content to go in the same direction at once. A most satisfying phenomenon!

Road feel has been preserved for those of us who like to think a car should be steered, not aimed, and road shock is effectively dampened out. This power assist has enough oomph to make parking easy, but at the same time you will be aware of a certain wheel resistance in a static turn.

Directional control is not affected unduly by cross-winds (we had 25-mph winds for a while) but the correction in varying



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Refinement rather than complete newness is apparent in many engine and accessory modifications which, while not necessarily of major importance, do contribute to smoother trouble-free operation.

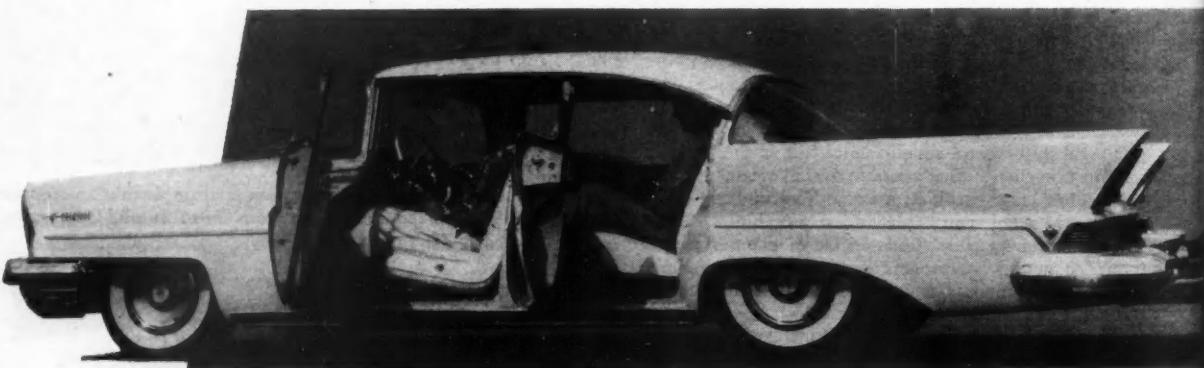
A new carburetor designed to withstand heat-soak conditions without boiling dry reduces stalling and hard starting due to heat (vapor lock). Fuel baffles or dams located in the primary jet area of the carburetor main body have reduced flooding or starving of the engine in high speed turns, a universal complaint of four-barrel carburetors (See Sept. MT "Technical Questions"). A new type of "Paper-Pak" aircleaner reposes atop this carburetor and is said to be 99.5 per cent efficient as compared to 98 per cent for the conventional oil bath type. The cellular

core can be cleaned by gently tapping it on a solid surface, or easily replaced with a new element which is never oiled.

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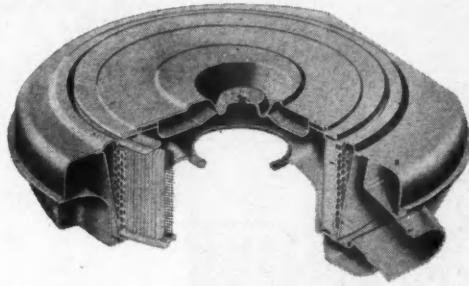
New three-piece oil control rings, self-locking tappet adjustment screws and a smaller (12-inch) steel torque converter with front-mounted oil cooler complete the engine refinement features.

Roadability in the '57 Lincoln has been given a shot in the arm. Not that the '56 had to take a back seat to anyone in this department, but it's still better this year. The ride remains soft but not mushy, and oscillation is conspicuous by its absence even over coordinated bumps that normally make a car act more like a bronco. We whipped this new Lincoln into really tight turns at spine-tingling speeds, and the only protest to be heard came from a set of screeching tires. Definite understeer was noted along with minimum body lean; the car goes into a four-wheel drift rather than just breaking loose at the rear end. When we



The new four-door hardtop series has the same commodious proportions as its conventional centerpost counterpart.

For better efficiency in the new 12-inch steel torque converter, '57 Lincolns have an air-cooled oil radiator.



Almost impossible problems with the aircleaner arose as a consequence of the '57 Lincoln's low hood lines. A solution was found in the use of a simple and efficient new Paper-Pak dry type unit shown in the cut-away view above and installed at the right.

purposely ran afoul of the basic laws of physics, the resultant skid was easily checked and directional control regained by a quick twist of the power-operated wheel. There appears to be a deliberate attempt to compromise between oversteer and understeer.

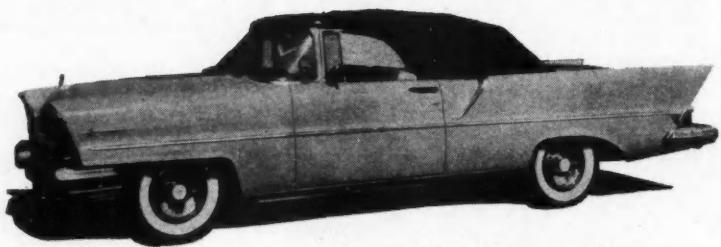
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## '57 LINCOLN continued



The new '57 Lincoln Premiere convertible.

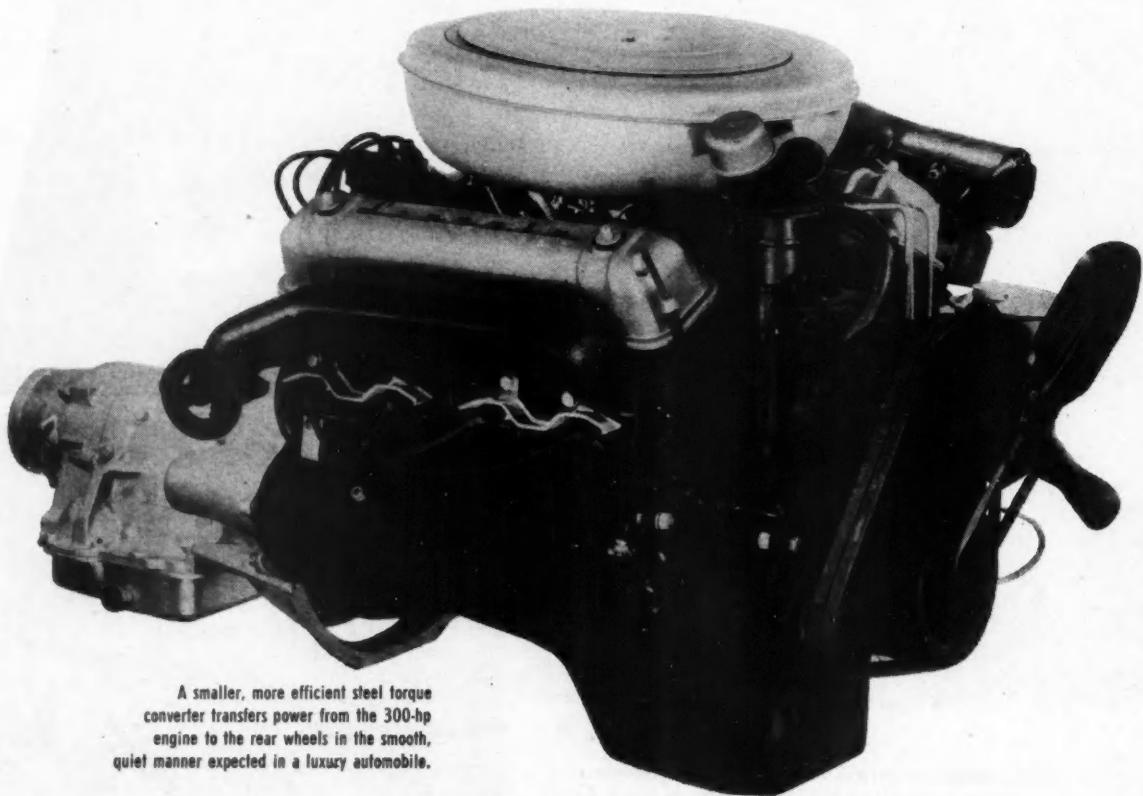
degrees will be necessary, probably due to gusty conditions.

The '56 Lincoln lost a bit of the '55's roadability by softer springing and body weight shifts. This feeling is even more substantiated by the definitely softer ride in evidence this year. Lincoln engineers meticulously tuned the '57 by slight changes in spring rate and steering geometry, then tied it down with greatly improved Hydro-cushion shock absorbers. They are designed to give better control over rebound and can be adjusted for hard or soft ride at the factory or local Lincoln dealer's. Unfortunately, this variable control isn't on the instrument panel (where it should be) but the adjustment is simple and does offer some choice in ride characteristics.

The limited-slip differential is another effort to cater to individualism. It eliminates the usual wheel spin by transmitting the major driving force to the wheel having the better traction. This unit has a lot of merit, especially on ice or snow, but will take some getting used to because of a transference of forces from wheel to wheel which can be felt by the driver. It is a new sensation but one which won't be noticed after a few hours of living with it.

Power steering remains essentially the same as last year and is standard equipment on all models with 3.5 turns lock to lock.

The frame under the new Landau four-door hardtop (available in both the Premiere and Capri series) has been substantially



A smaller, more efficient steel torque converter transfers power from the 300-hp engine to the rear wheels in the smooth, quiet manner expected in a luxury automobile.

beefed up to retain body rigidity. The regular four-door has a very thin centerpost with window frames designed in such a way that you won't find it easy to distinguish the conventional sedan from the Landau with the windows up.

The fad of exhaust outlets in the rear bumpers appears to be on the way out. Lincoln, like other makes, has concealed them under the car this year, and we feel this is a step in the right direction. At least the unsightly discoloration around bumper outlets will be eliminated.

Overall body length has been increased to 224.6 inches but height remains the same as last year (60.2). Lincoln has retained the 15-inch wheels which carry 8.00 tires (8.20 on convertible and air-conditioned models).

All in all, while the new Lincoln can't be called completely new, there are enough changes both style-wise and mechanically

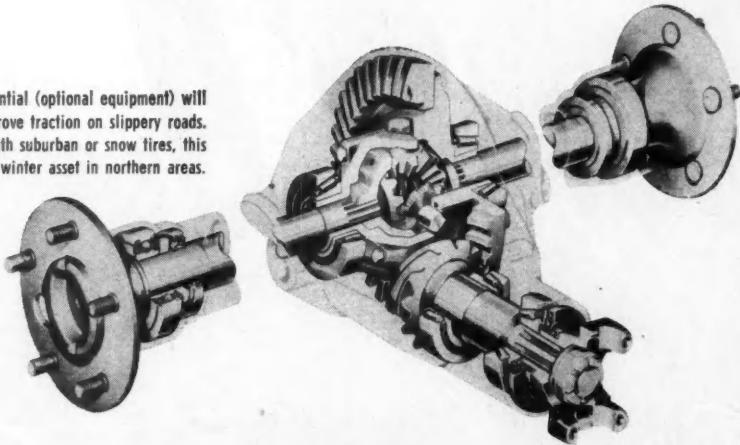
to create interest. We feel the canted rear fenders especially will come in for their share of pros and cons. Those who particularly liked the looks of the '56 will probably feel this new fender treatment has detracted from the quiet dignity that characterized its predecessor. Others, of course, will say it adds character. The same can be said for the front end treatment with the Quadra-lite theme. Four headlights are something you have to get used to and while we think they are here to stay, plenty of people will take the attitude that they look awkward. Aside from their looks, however, they have many safety advantages and should be looked upon as a boon to highway driving at night.

Regardless of individual likes and dislikes, the '57 Lincoln need not take a back seat to any car as one of America's top luxury automobiles. It is sleek, smooth and docile. It has a definite place in the hall of distinction.

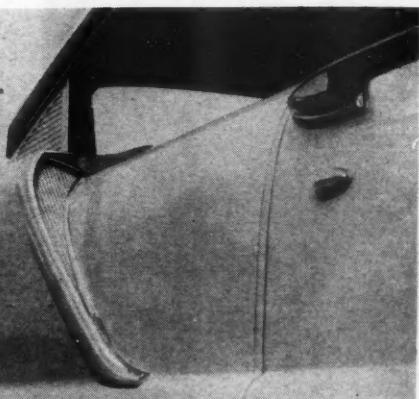
—J.B.

**The new limited-slip differential (optional equipment) will greatly improve traction on slippery roads.**

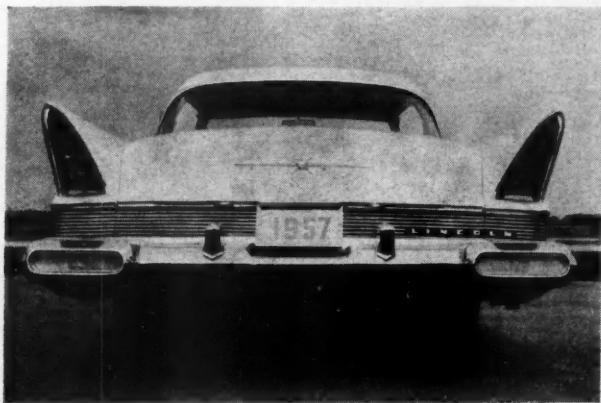
When equipped with suburban or snow tires, this unit would be a definite winter asset in northern areas.



Modifications other than the outwardly canted fins include relocation of the exhaust tips under the bumper, directed downward, and placement of the back-up lights in the bumper.



A fake aircoop is used at the front of the rear fender fins.



Premiere two-door hardtop. Capri differs in hubcaps, lettering.



57

# PLYMOUTH

TORSION BAR

LOWER CONTROL ARM

UPPER CONTROL ARM

BALL JOINT SUSPENSION

*A major step in improving American front end suspension systems is Chrysler Corp.'s adoption of torsion bars.*

**WE ALL KNOW** that 1957 Chrysler Corp. products will be little short of revolutionary. Much of this is styling, which can't be featured until our December issue reaches you. Meanwhile, we can give you a glimpse of the mechanical features that are only the less startling because they are hidden.

Our pictures of the new Plymouth chassis are typical of the whole line. The frame is longer and more rigid. Wheelbase for sedans and coupes has been increased from 115 to 118 inches. The new suburban bodies will dignify an unprecedented 122 inches. Front tread has been widened approximately two inches; the rear, one inch.

Most talked-about feature will be the front end torsion bars. Aside from improved ride, these have many advantages. The units are about 30 per cent lighter than the coil springs they replace. They are pre-loaded to increase resistance to fatigue, but should the units sag after many thousands of miles, there is an adjustment built into the rear mounts to take up the slack.

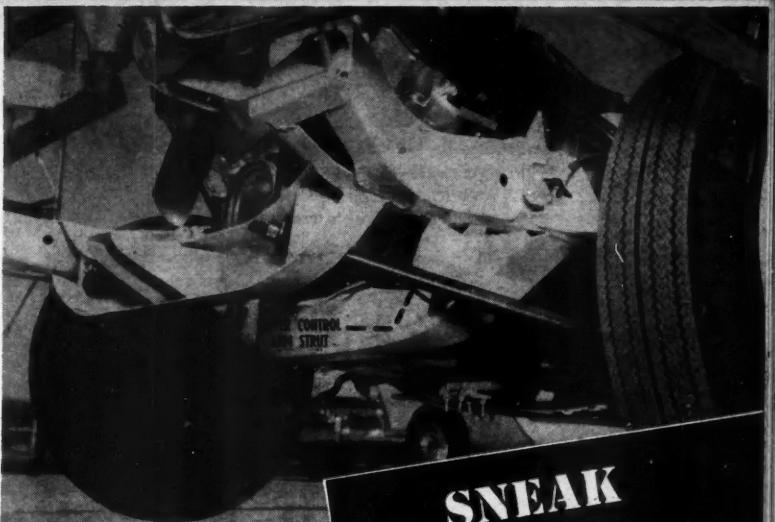
Other advantages include more freedom in the location of steering components and of course providing the necessary clearance for what will be perhaps the lowest production car on the road. Ball joints incorporated with the torsion bar design reduce grease fittings from 23 to eight on V8s, 20 to eight on sixes. Relocation of upper control arm inner pivots is claimed to reduce braking dip by 68 per cent.

Steering and suspension units are completely isolated by rubber from the frame. Newly valved Oriflow shock absorbers are designed to eliminate the float and waddle over minor bumps that has been characteristic of past Plymouths. Rear springs are conventional semi-elliptics, but outboard-mounted. Fourteen-inch tires are standard, but wheel rims have been widened to retain stability.

An option of either a V8 or the familiar six is retained. The V8, boosted to 301 cubic inches and an 8.5 to one compression ratio, gains further power from a revamped cam (standard V8 in Plaza models will be the 277-cubic-inch job). The Fury's equivalent for 1957 probably won't be announced until later in the season. For lovers of the six, it will remain unchanged except for a jump to 8.0 to 1 compression ratio.

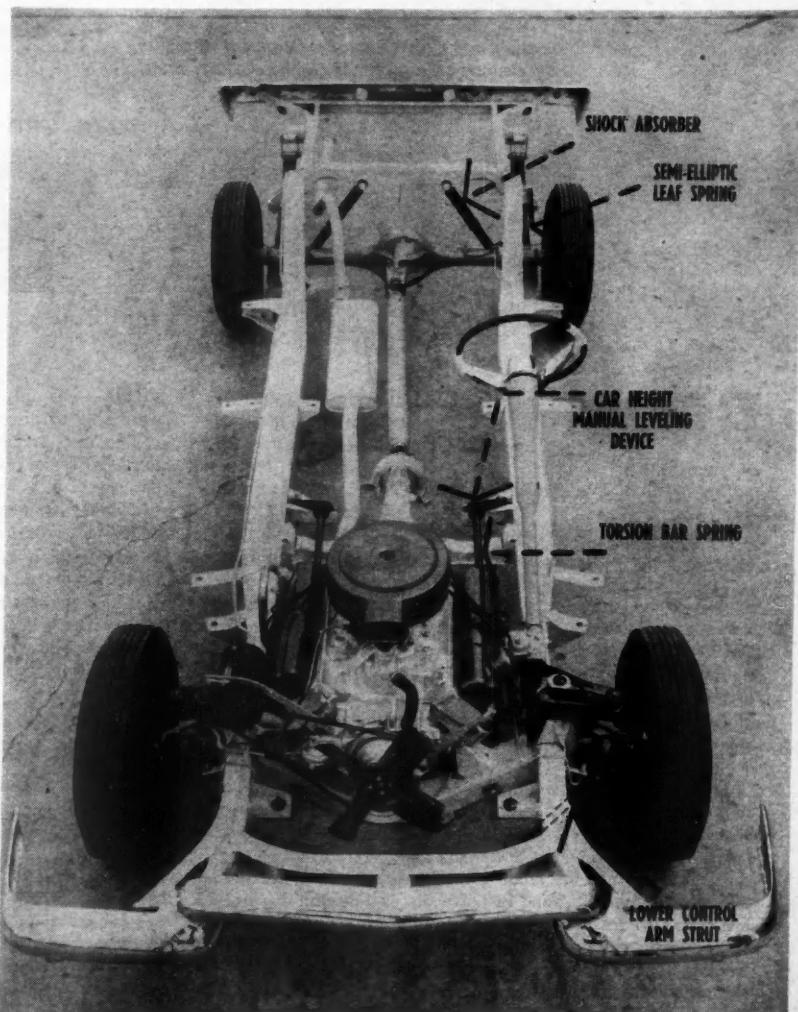
Center-plane brakes are standard, and three-speed pushbutton Torque-Flite will be optional on V8s. Three-speed, overdrive and regular Powerflite are available on all models.

—Don MacDonald

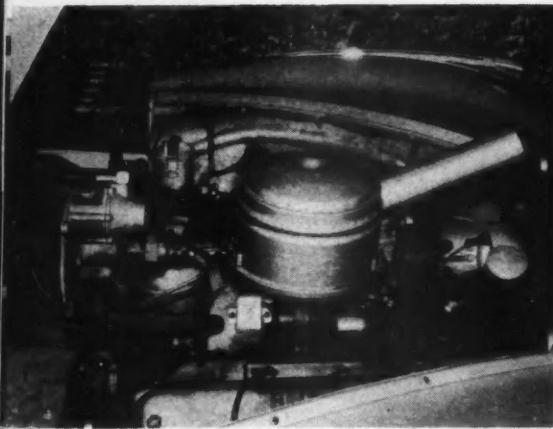


Viewed from the front of the chassis, the arm strut connects the wheel and frame.

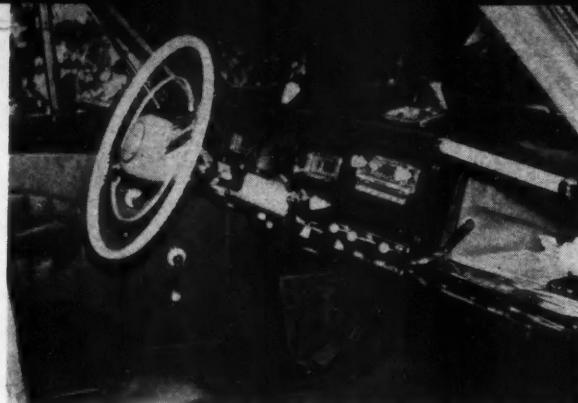
## SNEAK PREVIEW:



**Oil-bath aircleaner has long snout to scoop in air flow from over top of radiator. Circular gadget on shelf is part of heater mechanism. Metal plate over plugs must be taken off before removing them.**



**Traditional BMW styling remains essentially unchanged, and is a combination of pre-war Teutonic classicism and the sweeping curves preferred by Western European designers of the postwar era. Front end, especially, is lifted from the older BMW's.**



**Chrome trim, in small and tasteful quantity, is used around instruments, but note complete absence of any reflections from writer's photo flash. Wherry says he's never seen better leather or a finer upholstery job.**



*A rare and wonderful European V8*

## **Teutonic**

### **BMW**

**NEW BMW SEDANS** are quite rare in the U.S.A., especially the newest version, the Model 502. This is a refined and slightly more powerful variant of the Model 501, the first passenger car of this marque to have a V8 engine as standard equipment.

Brewster Automobiles Corp. of Oyster Bay out on Long Island is an adventurous firm; they seem to delight in handling cars that are invigorating to those whose veins flow with gasoline. Search for non-stodgy cars, and you invariably wind up in Brewster's showroom. Such was the case when the writer sought out this BMW. Put in touch with Mr. Sidney Kornblum, who has a thoroughly broken-in 502 with nearly 7000 miles on it, I found myself shortly gazing at this lovely German car. Alongside the 502, in the owner's garage, was a well-kept Mercedes 220 and—you might know it—a VW sedan. This was, not to coin a phrase, the garage of a true believer.

Long Island in the vicinity of Northport was swarming with summer vacationers and, since we had only a few hours to get acquainted with the car, we took right off after getting a briefing on the car's idiosyncrasies and many manual controls.

"This is the most stimulating car I've ever owned," Kornblum said as we climbed in, "and I've owned a 300-SL and many other fine cars." We learned quickly what he meant.

You enter through moderately wide doors fitted with flush handles. The windows are surrounded, on the exterior, with chrome that looks almost translucent; inside the trim is of polished hardwood. As to the latter, we should mention that the finish of the beautiful dash panel is beginning, already, to peel

slightly—the only negative factor about the entire car that we were able to discover in the few hours it was in our charge.

The seats are wonderfully soft, yet they offer good support to the back and one gets the impression that 600 or 700 miles a day would be a snap. A small lever at the outside base of each individual front seat backrest provides for tilting it for driving, or napping, comfort. The upholstery is a blue-gray woolen material with a short nap. Backs of the front seats are padded in a large roll; front armrests were at precisely the right level for me and with the seat fairly well back in its 4½-inch track, the driving position was good. The windshield pillars are moderately thin and do not obstruct the vision, but the right front fender was out of sight until the chin was hoisted nearly enough to be uncomfortable. The rear seat will hold three slender persons comfortably when the center armrest is folded. There are side armrests, rear quarter vent windows that open wide, and the rear windows roll all the way down manually, but not very quickly. All doors lock from inside with the familiar mushroom-headed pushbuttons on the doorsills. Behind the rear seat is a parcel shelf. The floor bulge over the propeller shaft is slight, a tribute to the manner of BMW frame construction.

BMW frames have box-section longitudinal members spaced very wide by means of large cylindrical crossmembers. The rear crossmember is just forward of the rear axle where the rear kick-up bends downward. At mid-point of the car's length, the side rails are nearly full width. The center crossmember is depressed to pass beneath the rear end of the transmission housing's junction with the front universal joint. The body floor pan sets down inside this frame—both front (Continued on page 70)

# OPEL

WHILE BEATING THE BRUSH recently in search of an elusive Mercedes-Benz 300 station wagon (you read it right!) I came across an intriguing little German Opel wagon.

Forthwith I pursued the red and cream car, caught up with the driver on his way into a restaurant, and presented my case on behalf of the readers of MOTOR TREND. To make a long story short, I finally contacted the owner, who turned out to be G. D. Riedel, Vehicle Sales Manager in GMC's overseas sales office in New York City.

Of course Mr. Riedel was happy to cooperate but made it plain that GM isn't wild about importing *any* of their European-built cars. Aware of the fact that a few Opels are being privately imported for sale in the States, Riedel handed me the car and away we drove to see if this little gem could be the answer to those who, like myself, are a bit unhappy with the way our domestic Rambler is putting on weight and size.

Opel, long an affiliate of GM, is said to be second only to Volkswagen as a producer of cars and trucks in Western Europe. Their products reflect much of the same sort of engineering as do those of Flint, Detroit, etc., but the cars are smaller, pleasantly economical to buy and operate, and welded integral construction (no chassis and very few bolts) is used throughout the passenger line. The Opel Rekord is produced as a sedan, convertible, and this little station wagon. Actually this is not a *little* car in the European sense of the word. It will seat a family of five quite comfortably; the engine is a 4-cylinder overhead valve job that looks like a foreshortened Chevrolet six plant. The displacement is 1.5 liters (90.8 cubic inches). It's a fuel miser, and while

not overly fast, it will maintain a 60-mph cruising speed all day long, if necessary, without undue wear, as the stroke is relatively short and the maximum revolutions are on the moderate side.

There have been a number of Opels brought back by returning GIs. A few of these used Opels have found their way into the East Coast's lively trading in foreign cars, but the majority of them are kept in continual use by those who have brought them home. Near where I live there are a number—one has seen over two years' service without mechanical difficulty; it's owned by a middle-aged teacher who bought it new during a European trip, likes it so well she has no intention of disposing of it. Vaughn Imported Cars in New York City has brought in close to a dozen brand-new ones to customers who ordered them simply on their known merits. If GM ever gets back into the standard economy car business, the Opel Rekord could be the domestic pattern.

So how does this car stack up? Size-wise it's only a few inches shorter than the new British Ford Consul Mark II and it's a couple hundred pounds lighter. The engine is about  $\frac{1}{10}$  the displacement of the Consul, the rated output is roughly  $\frac{1}{6}$  less, this wagon seats five instead of the Consul's six persons, and performance is decreased by about the same proportion as engine size. But, this is a station wagon and, thus, its utility brackets the range from family runabout to doubling as a dandy rig for the salesman, plumber, carpenter, etc. Economy is excellent; unfortunately it was circumstantially impossible to make a close mileage check but having recently tested an older, well-worn Rekord two-door sedan which gave from 20 (in city) to a fraction over 30 mpg on the road, I think (Continued on page 46)

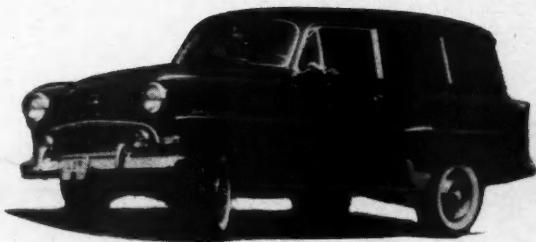
## Twosome by Joe Wherry

How about an import campaign?



There's an even 5 feet of floor length with rear seat folded. Door opens sideways making tail end good for loading but poor for long loads.

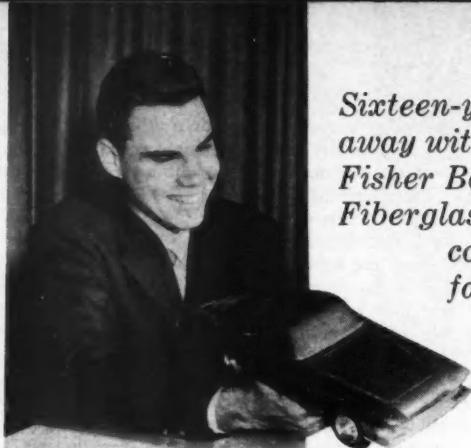
Suspension is fairly soft, ride is good but a bit choppy (not extreme) on rough roads. Roll (as here) on an acute and hard corner, is about like average American car.



Front seat rolls back on roller at bottom of seat pedestal. Sand in this roller groove made seat hard to move. Instruments are easy to read and speedo has mph on dial. Glove compartment is large.

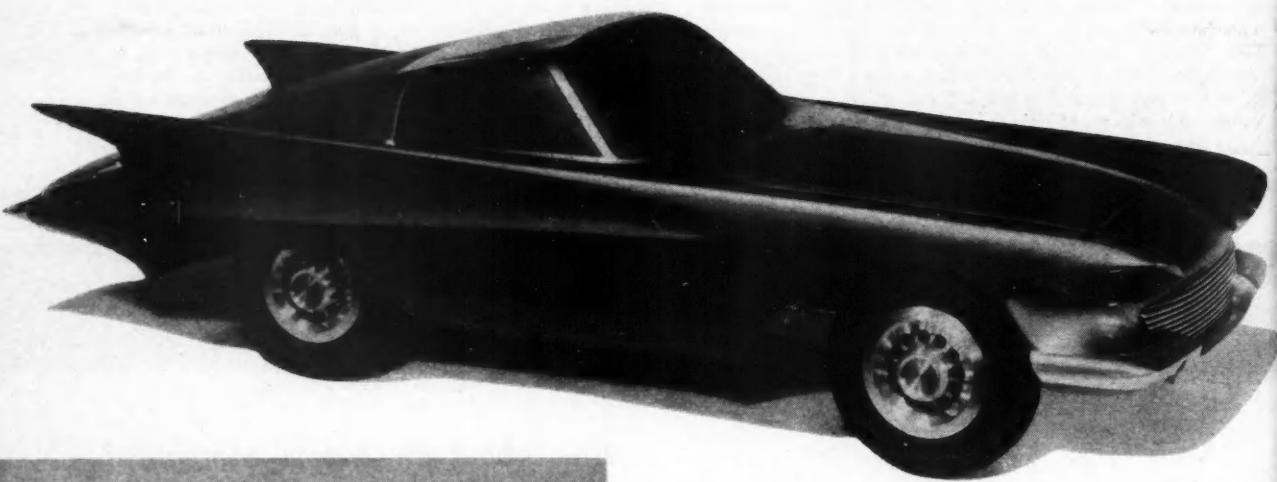


JOE WHERRY

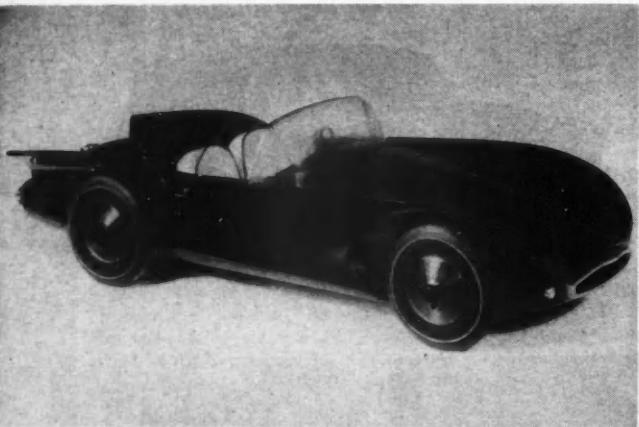


Sixteen-year-old Bryce Miller of Detroit walked away with Junior Division honors in the recent Fisher Body Contest with this beautiful Fiberglas-molded hardtop. Winning design contests runs in the family: Bryce's step-father was a Motor Trend winner in 1950

## FISHER FORESEES THE



Miller's model features retractable headlights, but otherwise relatively uncomplicated structure.

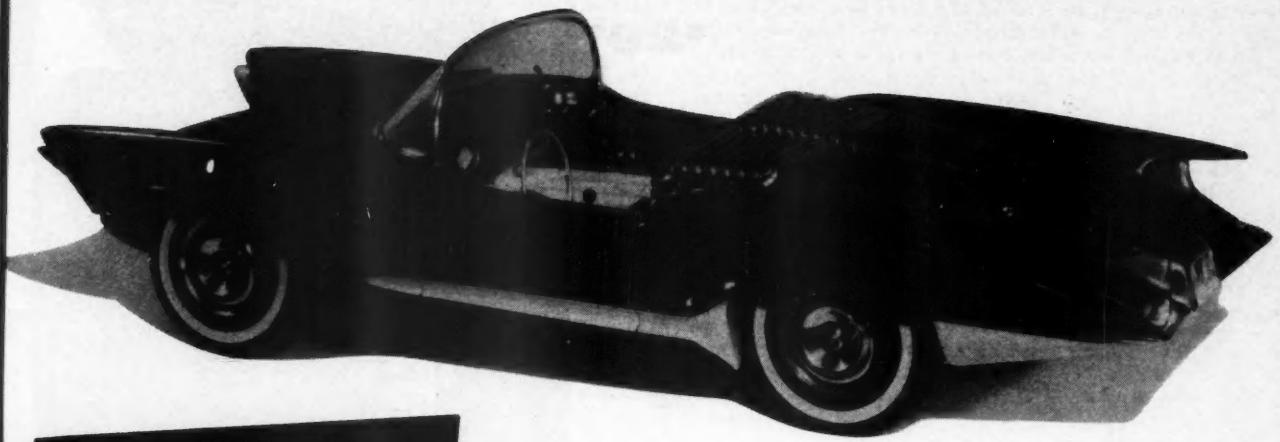


Sculptured fenders and crisply clean wheels won for David W. Cosper of South Bend, Ind., a \$1000 university scholarship.

**B**ACK IN 1950, the *Ford Times* sponsored and MOTOR TREND conducted an automobile design contest primarily to further progress towards the goal of a true American sports car. Contestants were required to submit plans of their design based on a Ford Anglia chassis and either renderings or models or both of the projected full-scale car.

The big catch to the contest was that in addition to the \$500 cash award, the winner was expected to actually build the car on the chassis, which we furnished. Vince Gardner, then a professional stylist with Raymond Loewy's Studebaker group in South Bend, Ind., won hands down with a beautiful design for a two-passenger sports roadster.

Vince left his job with Loewy, journeyed to our West Coast offices, picked up his cash and the chassis, and set to work. After two laborious years the strikingly handsome result emerged as the Vega, featured on our September 1953 cover. He and a group of backers fully expected to put the car in production, and molds were made to produce Fiberglas copies of the original all-steel body. Like so many other worthwhile projects, however, lack of adequate financing forced abandonment.



Senior Division winner was Bill Moore of Los Angeles, with this crisp design for a two-passenger sportster. Judges were particularly intrigued with the way Bill tailored the headrests into the rear deck line.

*future*

Meanwhile, he married and settled down in a Detroit suburb as an independent designer. One example of his work that can be seen on any street corner is the face-lifting job for the 1956 Studebaker sedans. S-P turned to Gardner in desperation after breaking with Loewy, but despite the happy, fast-selling result, the corporation and Gardner didn't see eye to eye on the reward, and the case is being decided in Detroit courts.

Despite his disillusionment with automobiledom (Vince is now designing appliances for Kelvinator), he encouraged his stepson, 16-year-old Bryce Miller, to enter Fisher Body's annual Craftsman's Guild contest for the first time. The result, after 800 hours of labor, won Bryce first place in the Junior Division: a \$5000 scholarship in the college of his choice.

All did not go smoothly (which did not surprise Vince!). At one point, Bryce seemed to have abandoned the project. His stepfather, sensing understandable discouragement, asked: "How would you like to earn \$1000 a week for the next five weeks?" Surprised, the boy replied, "Of course I would. How?" The answer came back: "Get down in that cellar and finish the model."

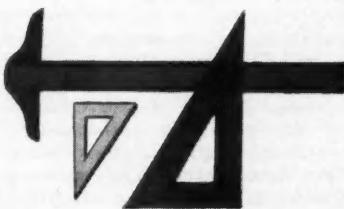
Bryce was one of the few winners who chose to fashion his model from Fiberglas, a tough technique even for an adult professional which, of course, his stepfather is. However, help, as long as it stays within the realm of advice and guidance, is legal and encouraged. If no adult within the family is qualified, the boy may write the Technical Department of the Guild.

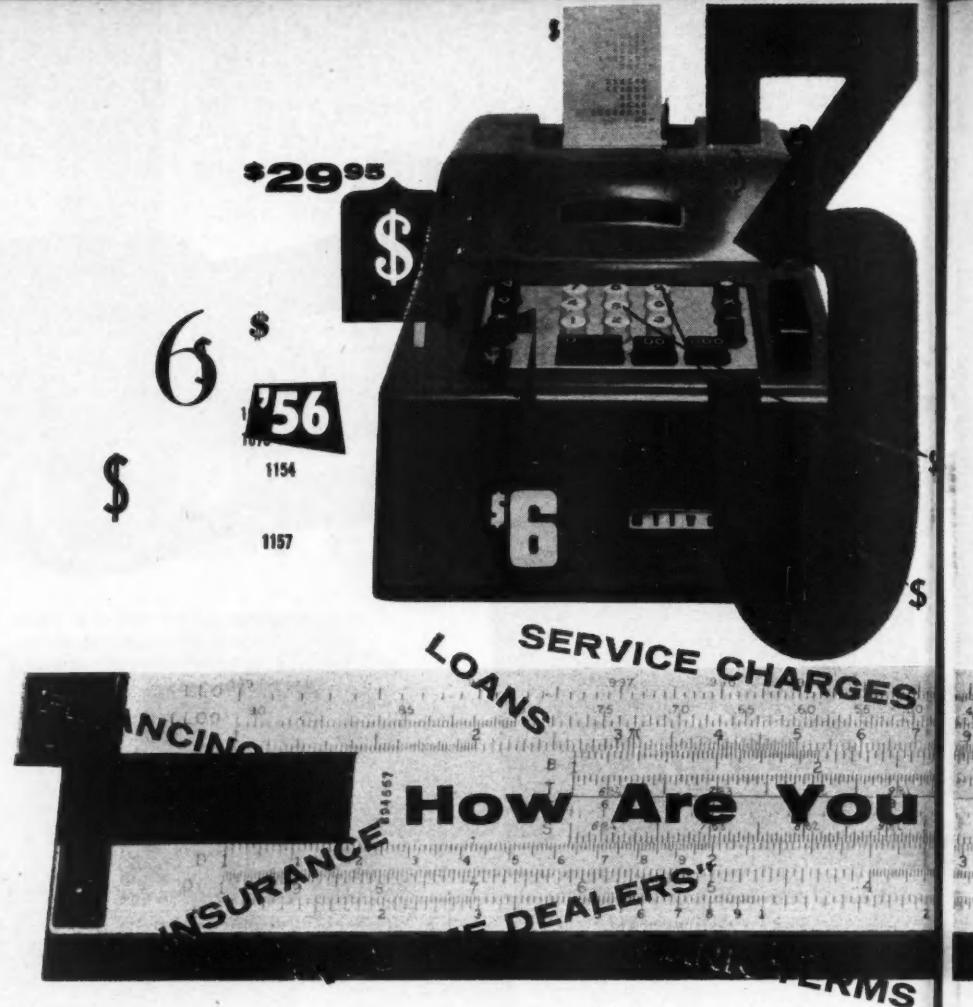
Bryce and his family are very proud of his achievement, and so is MOTOR TREND. We hope that this encouragement, the first for the family—automobile-wise—in a long while, will persuade Bryce to drop his current plans to become a medical research scientist in favor of a career in styling. Deep down in his heart Vince agrees, we know.

—Don MacDonald



Most orthodox and even classic of all is the second place winner in the Senior Division, entered by Murray Milne of Detroit. As Murray is a summer GM employee, a duplicate award was given to Jerry Winkley of Rollins, Mont. It was the sixth and most successful time in the competition for both boys.





**"I HOPE YOU'VE PLENTY** of money," said the factory's finance representative as he cautioned me that some auto dealers were rather rough characters when anyone began prying into their car financing operation.

All I could do was pray that my attorney was right when he said, "You're safe as long as you don't sign anything, leave any money or drive out in a new car."

A day later, one Gordon Andrews, clad in slacks and sport shirt, ambled into the showroom of a new car dealer handling one of the "low-priced three." For five minutes car doors were banged, steering wheels twisted and seats tested before an unassuming redhead individual identified himself as a salesman by saying, "What can I do to help you, Sir?"

"My wife wants me to see you people about buying a new car," said Andrews. "She saw you on television and you people said you would deliver a car for a very little down payment."

"That's right," eagerly replied the salesman. "Let me show you a few of these cars." With that he took Andrews through the showroom displaying various models, discussing their prices and presenting a personal opinion of their relative merits. Later, Andrews was taken on a short demonstration ride to test "the powerful 1956 engine and fine power brakes." Conveniently enough the demonstration ended at an open air parking lot loaded with cars. There were nearly 150 different model cars on this lot, all of them brand new, but in varying stages of decay from inclement weather, dew and sun. After a three-minute tour of the lot to help Andrews select color combinations of wifely appeal, the salesman said, "Let's go over to the office and see what sort of a deal I can give you."

"That sounds fine," said Andrews. "Let's go." In one of the many cell-like cubicles, a pad of scratch paper was produced to record the discussion of body style, additional equipment and delivery terms. All Andrews wanted was a hard-top coupe with two-tone paint, automatic transmission, radio, heater and white sidewall tires. This was duly noted and the salesman left. He returned a few minutes later with an inventory stock card describing a yellow and black coupe already on the warehouse lot. With the salesman was another gentleman introduced as the "Sales Manager" but actually known to the trade as the "T. O. Man," or Takeover Man. His job is literally to take over the customer and steer said pigeon gently but firmly through the labyrinth of confusing paperwork. His first question concerned the potential down payment.

"My wife and I have already decided we can pay \$300 down and we want to take 36 months to pay for the car," said Andrews.

"Fine," said the T. O. man, as the 1st salesman left the room. "We can work out a real nice deal. We figure your car will cost \$3756.82, to which we add the sales tax and the license fee, making a total cash selling price of \$3938.10. Now because you have no trade-in, we're going to give you a discount, 'cause we like to do business with people who have no trades. We're going to knock a full \$400 off the price of this car."

"Gee, that's wonderful. My wife will really be happy," bubbled Andrews. "That's one of the nicest things I've heard of in a long time."

"Well, we like to treat people right," said the T. O. man. "Now you're going to give us \$300, but we need at least a third down so we can sell you a car on 36 monthly payment

terms. To make up the difference between our discount (\$400) and your \$300, I'm going to loan you \$615, which will make up the balance of your down payment of \$1315. Now, you want to run payments for 36 months?"

"That's right," answered Andrews, "but don't forget I also want you to take care of my insurance. I understand it has to be purchased, and can go with the contract."

The T. O. man almost couldn't believe his ears at this windfall opportunity to squeeze a few more bucks from his obviously unsuspecting customer. "I'll be glad to get your insurance for you. Let's see, Fire, Theft, Comprehensive Coverage and \$50 Deductible Collision for 12 months will only cost you \$74, which brings your total balance due (after the \$1315 down payment) to \$2697.10. Now, we'll finance that for a full 36 months, at payments of only \$91.34 a month."

"Oh, that's fine, but how am I going to pay back the \$615 you're loaning me?" questioned Andrews.

"Don't worry about that. I'm not really loaning you money here. I loan it to you from an office a couple blocks down the street," said the T. O. man. "Just before you get your car you

There's no excuse to pay anyone \$850 for the privilege of doing business with them, when there are still so many reputable businessmen left in the United States.

The most unusual fact was—this dealer was charging extra for the heavy duty battery that comes with that model car as standard equipment.

#### Next, a Wildly Advertising Dealer

It would be completely unfair to tar and feather all auto dealers on the basis of this one actual experience of which we have documentary proof. However, on the very same day, Gordon Andrews visited a wildly advertising dealer handling another make of the popular low-priced three. Despite the bad reputation of some so-called "volume dealers," the same bumbling approach by our Mr. Andrews produced, in this case, a different result. The car and its accessory equipment, only one item of which (tinted glass) was undesired, was priced exactly at the suggested retail prices. Inasmuch as Andrews still offered only \$300 as down payment, the T. O. man requested he visit a nearby loan company and borrow an additional \$200. The



by William Carroll

go down there and sign a couple of papers and everything is all taken care of. That \$615, you can pay back at the rate of \$33 a month for 24 months. In that way we can deliver a car to you for only \$300 down."

"Well, thanks a lot. That's certainly nice of you," said Andrews. "I'm going to take this paper home to my wife and let her look at your figures and we'll be back tomorrow to pick up our car." With that graveside eulogy to a now dead deal, our Mr. Andrews left the dealer's showroom and began to breathe fresh air again. How good a deal this had been is disclosed by an analysis of figures on the order blank, which was signed by both salesman and T. O. man, but not by "Mr. Andrews." The car and accessories were priced a total of \$591.63 above the suggested retail price, which is one tremendous amount of money to pay under (or over) the table for the privilege of doing business with these quasi-legal nomads. In addition, they were charging a total of \$591.14 to finance two-thirds the purchase price of the vehicle. This figures out to seven per cent interest, plus a little less than a dollar service charge on each of the 36 payments. That pleasant little side note of \$615 which Andrews' friend, the T. O. man, was going to hold, was costing \$177, which figured out to almost 15 per cent interest.

Further figuring disclosed there was a total of \$1299.77 in excess charges, finance costs, side note fees and brokerage charges tied up in the purchase of this car, not to speak of nearly \$300 worth of unwanted accessories which "come with the car" (?). The same car could be purchased through a reputable bank or finance company for something like \$850 less.

payments on this \$200 side note were \$10.33 for 24 months—eight cents short of 12 per cent! However, the prime financing deal offered by this second dealer was certainly more than satisfactory. Insurance was provided near the standard rate and included in car payments of \$98.31 per month for 30 months. The interest rate on this loan figured out to 3.5 per cent. This is what is known as a "preferred rate," discussion of which will follow later in this article. Bear in mind, however, that this dealer did not give the customary discount on the purchase price to Mr. Andrews.

#### And Next, the Largest Dealer

The third dealer visited by our Mr. Andrews is the largest dealer in an area of nearly a million people. He too, sells one of the low-priced three. Here paperwork was prepared for the purchase of a hard-top coupe complete with radio, heater, automatic drive, two-tone paint, wheel discs and white sidewall tires. With tax and license this car came to a total of \$3126.88. Because no trade was involved in the deal, a "special discount" of \$506.88 was allowed. This discount and Andrews' \$300 were listed as down payment of \$806.88. The balance due on the car was \$2320, plus \$191 for 36 months of insurance. It might be mentioned this is the same amount of insurance for which the preceding dealer was charging only \$127. And the first dealer would have charged \$222 for the same coverage!

Payments for both car and insurance came to \$83.63 for a total of 36 months, with no side note. This figures out to six per cent per year, plus \$1 per installment, plus some type of undisclosed charge making up a (*Continued on page 54*)

AN **M**  
**T** BOOK DIGEST

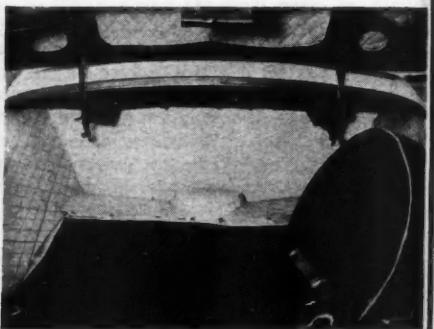
## CUSTOM CARS



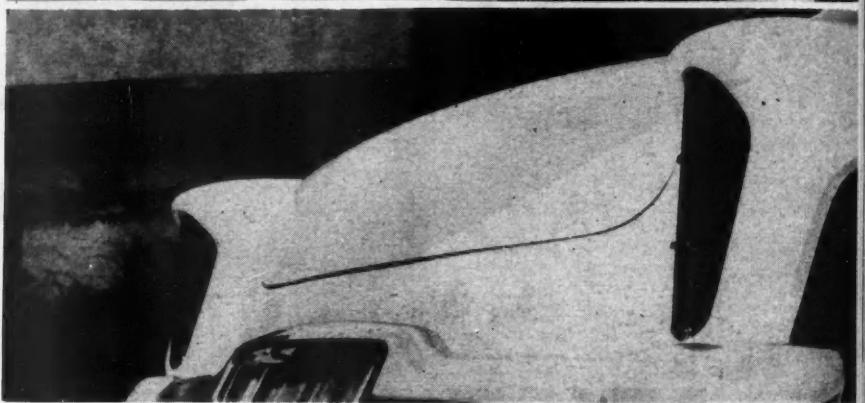
1956 ANNUAL

OCCUPYING the first portion of *Custom Cars 1957 Annual*, Trend Book 133, the customs illustrated on these two pages are two of the cars selected as "10 of the Best"; five of the others have appeared in past issues of MOTOR TREND. They form an hors d'oeuvre to whet your interest in the many other customized beauties in the remainder of the book, the next four chapters of which are: "The Newest in Customs," "Pickups," "Snappy Station Wagons," and "The Latest Craze—Striping." As you would imagine, these subjects are well covered with photographs and the prose of Jim Potter and George Barris, giving you a ready fund of ideas and suggestions that are not only interesting to the casual reader, but may provide an inspiration for your own customizing plans. The chapter on striping contains some fine examples of this nearly-lost skill, as practiced now by Von Dutch, Jefferies, Tommy the Greek, and others.

The last chapter is devoted to step-by-step instructions on procedures for enhancing the appearance of your car, plus many styling reports. Titled "Do It Yourself Customizing—From Bumper to Bumper," it forms the most complete section of this type ever published in one book.



DEVELOPED from a '54 Ford, Don Lerner's attractive car has won the semi-custom division at auto shows in his home town, San Jose, and in Oakland and Sacramento, Calif. All the modifications were performed by Joe Wilhelm, also of San Jose. A '55 DeSoto grille is floated in



the frenched shell, with the hood modified to form the top portion of the shell opening. The hood aircoop is recessed into the panel and is adorned with penetrating teeth and a mesh screen. A similar mesh-screened scoop is frenched into each of the rear fenders. Headlights are '55 Buick units,

tail lights are '55 Chrysler, frenched into position with inch-diameter tube. All body seams have been filled and the doorlatches are operated by micro-switches beneath the medallions on the rear corner posts. Paint is white and a light shade of metallic purple lacquer, rubbed to a high gloss.

PHOTOS BY JIM POTTER AND GEORGE BARRIS

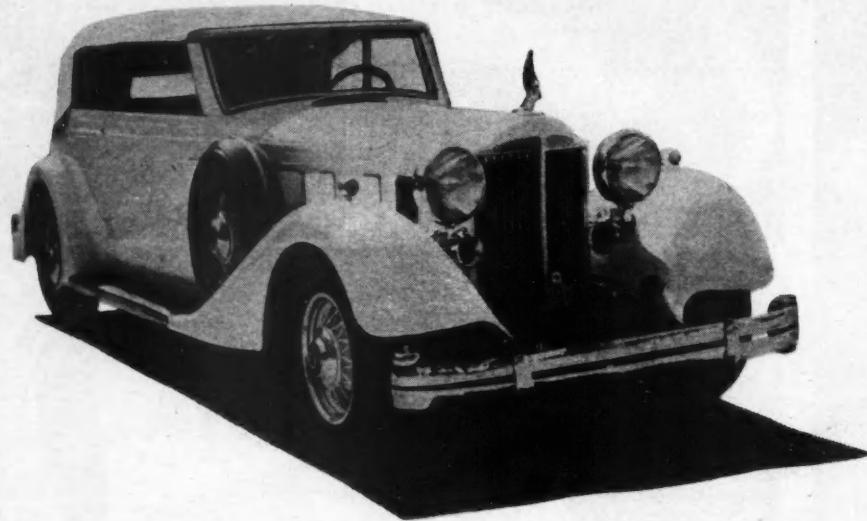


**B**UMPER-TO-BUMPER RESTYLING of this '49 Mercury resulted in first-place trophies in the custom coupe division at the San Jose, Monterey, and Sacramento, Calif., auto shows. It features a chopped top, creaseless, slab-sided body and doors, and completely molded seams and rounded

corners on the hood and rear deck. A special floating grille is inserted into the frenched shell. Tail lights are cast from red lucite and frenched into the rear fenders. All body work was done by Sam and George Barris, with striping by Jefferies. Carson Top did the interior upholstery,

which is red frieze with gold lining and white Naugahyde. The luggage compartment is also completely upholstered. A 45-rpm record player nestles beneath the dash; all doors, windows, the hood and rear deck lid are pushbutton operated. Engine is an Olds Rocket with 4-barrel carb.

**CLASSIC**



## MYSTERY PACKARD?

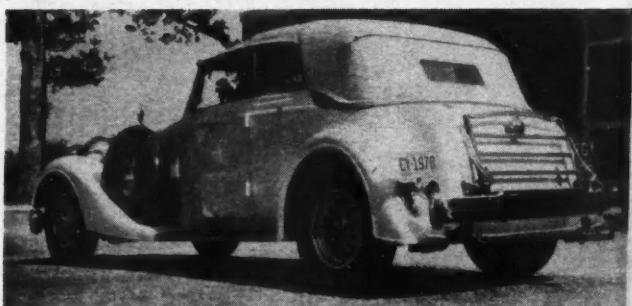
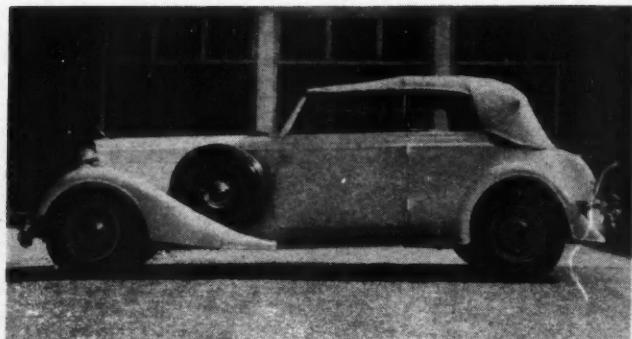
"IN MAY OF 1955, a car described as a 7.5-liter Packard with German coachwork was advertised by Vintage Motors of London, England, in *The Autocar*," writes Robert E. Bass of Chadbourn, N.C. "I obtained pictures and thereupon became characteristically over-enthusiastic. I immediately sent them the money and had the car shipped over. It arrived in Norfolk, Va. in July, 1955.

"When I first saw it, I realized that I had paid too much for it, but now I am not sorry. The restoration is now complete. Except for the removal of the body from the chassis, it was a complete and total restoration with replacement of some body wood, complete replating of all bright parts, rewiring, and overhaul of the engine and transmission. The body is very similar to that used on the 540-K Mercedes-Benz; in fact, almost identical. You will notice the top of the windshield and the fold-down window-posts. The headlights are Robert Bosch 14-inch. Also, there is a kilometer speedometer.

"I would like to establish the fact whether or not this is a one-of-a-kind. I have written to the president of the Mercedes-Benz Club of England but he has no information on the builder, the Keller Eichelbaum Co. I also wrote to the Mercedes-Benz factory with no luck."

The only information we have on Eichelbaum is that the firm was a small body builder in Germany. It is most likely, because the German custom body work is on a Packard chassis, that the car is a one-of-a-kind classic. Congratulations to Mr. Bass.

Beautifully restored, this unique classic is the product of German craftsmanship on an American foundation. The body was built by the Keller Eichelbaum Co., on a Packard chassis.





## COMMENTS

by Robert J. Gottlieb  
Classic Car Editor

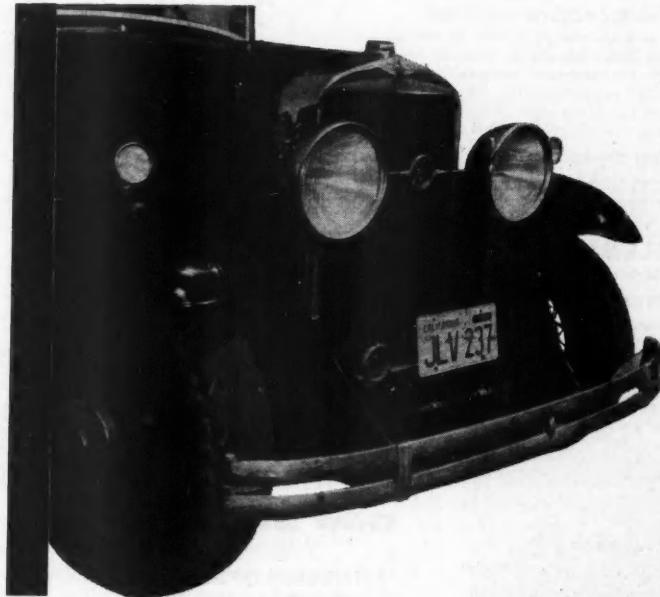


*"The La Salle looks like a classic,  
handles like a classic . . . but no  
La Salle ever built is a true classic."*

THREE ULTIMATE FACTS are found in the many thousand attempts to define a classic car. The overwhelming majority of enthusiasts agree that the true classic is a distinct car, a prestige car, and, most important, the finest example of the automobile manufactured during the period in which the car was built. Various elements, attributes and features are included in different definitions, but the ultimate conclusions are almost always unanimous.

The General Motors dynasty of today grew out of the General Motors dynasty of the early Thirties. Many dependable marques were built since its inception. The early Thirties found General Motors, Ford, and Chrysler engaged in furious battle, not for survival but for supremacy in total output. Each company produced a line of cars designed to attract buyers with small, average, or bulging wallets. Each company also had a marque aimed and directed at those limited few who could consider the likes of the Duesenberg, Hispano-Suiza, or Mercedes. Ford relied on custom-bodied Lincolns, Chrysler on LeBaron and Waterhouse-built custom Imperials, and General Motors on Cadillacs, with particular emphasis on Fleetwood-built bodies. Thus it was that with Cadillac, General Motors' stockholders hoped to upset the high-flying Packard, the fast-moving Marmon and the stately, aloof Duesenberg.

By 1930 the Depression had a pretty good hold on the American public. La Salle was firmly established, along with Chevrolet, Pontiac, Oldsmobile and Buick as General Motors' products. La Salle was selling in that price range between the highest-priced Buick and the cheapest-priced Cadillac. Its manufacture was such that it was very similar in appearance and construction to Cadillac, and though the company fought the implication, La Salle became known as, and was commonly called, "a baby Cadillac."



There are many enthusiasts who stoutly deny that the Cadillac automobiles of the early Thirties are classics. Assuming that the Cadillacs *were* classics, a situation existed in which a manufacturer built a companion line which was smaller and cheaper, yet every bit as dependable as the prestige line. By itself, and comparing La Salle with no other automobile, it looks like a classic, handles like a classic, and is most outstanding in appearance. By itself it stands in a very favorable position. When compared with Cadillac a distinct difference is noted.

Both marques were distinctive, but Cadillac produced the prestige automobile—La Salle did not. More important, the La Salle, as a cheaper edition of the Cadillac, was not the finest example of the automobile manufactured during the period

in which the car was built. For this reason, by today's standards and definitions, the 1930 La Salle convertible coupe is not a classic car. Any enthusiast would be happy to own one in mint condition because of its appearance, fine construction, dependability and unusual features. The La Salle is a semi-classic; many models are special interest cars, but because engineering and construction efforts and achievements were directed into the Cadillac and not the La Salle division, no La Salle ever built is a true classic.

### Some Points About Prices

Ascending prices for the classic car hobby must never deteriorate it to a rich man's hobby. Yet, if this ever occurs, we will have no one to blame but ourselves. Newcomers to the field seem to be the

You need to  
If you have  
one of these  
**COMMON CAR  
COMPLAINTS**

- Hard starting
- Engine dies
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- Jerky acceleration
- Low gas mileage

**Here's why** —Milemaster prevents flooding, percolation, and so-called vapor lock caused by too much fuel being forced through the carburetor with insufficient air to provide proper mixture. Pressures of fuel pumps force raw gas past the carburetor float needle into the engine. This fouls the ignition, prevents efficient combustion. Unburned fuel washes lubrication from upper cylinders and pistons. Raw gas drains into the crankcase, dilutes the oil, forms harmful gums.

**Milemaster cures engine troubles!**

Milemaster cures these troubles, simply, by absolute regulation of required pressure. Milemaster is controlled by pressure built up between carburetor float and seat. It keeps the fuel pump from forcing surges of fuel past the needle valve assembly which is set for a pressure below that of the pump. Milemaster provides a regulated pressure that is always right regardless of throttle demands.

**New motoring thrills!**

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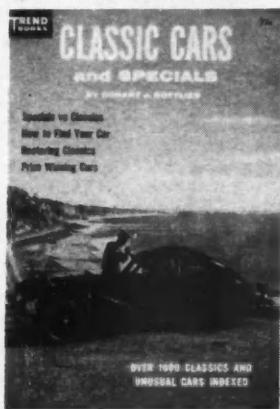


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chief offenders. The neophyte may search for months before finding a classic. When one is located he often permits the excitement of the find to override good business judgment. Those with one or two acquisitions already in the stable are more prone to haggle and barter over sales price. The differences in attitude result in strange and often irreconcilable analogies. One enthusiast may purchase a 1930 Pierce-Arrow for \$150 while another may purchase a similar model in worse condition for \$1000. Some enthusiasts never acquire and restore a car without spending more than \$2000. Other enthusiasts can acquire and restore cars with maximum expenditures of \$500 or \$600.

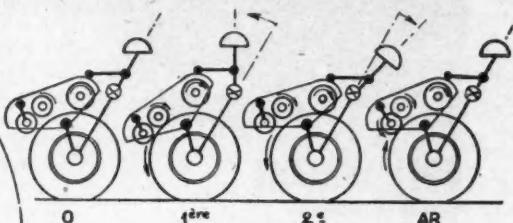
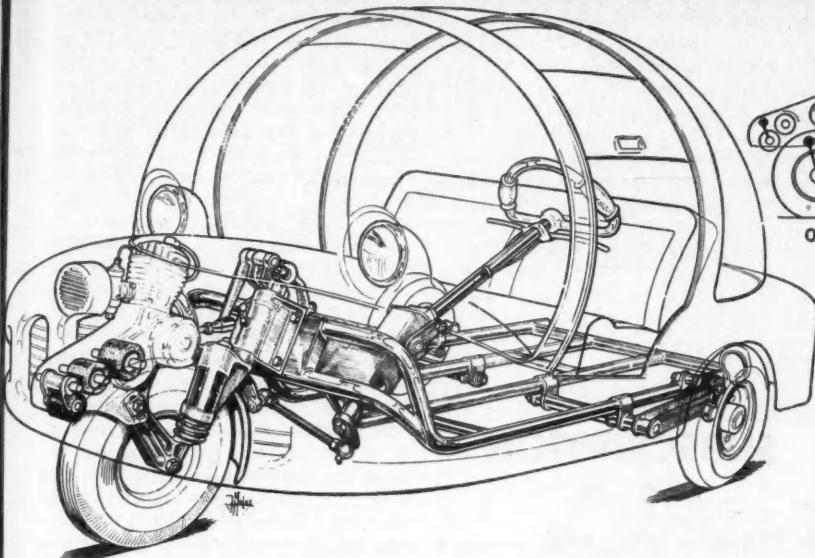
A lot depends on the amount of time that can be devoted to the hobby and the mechanical ability of the individual collector. Individual "A" may have the ability and the time to restore a completely dismantled vehicle; individual "B" may not have the ability or time to restore the same car. A dismantled vehicle is therefore worth much more money to one individual than to another.

The Auburn-Cord-Duesenberg Club is gently chiding me over my failure to purchase an almost completely dismantled Duesenberg for \$400. The ultimate purchaser of the car paid more for the automobile than \$400 and he feels that he made a wonderful buy. The mere fact that a car is declined by a prospective purchaser at a given price does not mean that the automobile is not worth the asking price. There are so many other factors to be considered. One individual may be in a position to assemble a car in a period of three months; another may be in a position to devote such a small portion of spare time to it that assembly would take six or seven years. Thus one enthusiast declines while another accepts a certain machine.

Of course, there are always those people who will snatch up an automobile and sell individual components for a sum exceeding the original purchase price. This could have been done with the Duesenberg in question; the engine and transmission alone would bring \$400. Instruments, tires and differential could conceivably bring another \$400. The net result would, of course, be profit to the buyer and destruction of a most wonderful piece of machinery.

A lover of fine machinery cannot place destruction above profit. Millions of dollars are made each year from junking automobiles, including the fine classics. Fortunately everyone is not interested in profits from parts or everyone would be in the wrecking business. In situations such as this, it seems reasonable to decline the purchase of a car that does not suit an individual or meet his requirements. With time and patience, classics can always be found at reasonable prices. —R.J.G.

# THREE-WHEEL TOWN CAR



A FEW DAYS before presstime for this issue, Guy Storr cabled us from Paris asking if we had heard of the new three-wheeled, two-seater, plastic-bodied town car to be produced in great quantities for home consumption in France. We cabled negatively, but asked for more info. Here it is:

It seems that "a very powerful French group has produced 10 prototypes . . . of a

town car with plastic body . . . to be produced in very large numbers competing with the scooters, the Isetta, the 2-CV Citroen, and even the 4-CV Renault—in some cases." We'll buy its competition with the first two, but look mighty incredulously at the others.

Competition or not, this three-wheeler does have some interesting features, chief among them being its unique transmission.

The transmission is actually a series of three rollers that are controlled by the action of the steering column.

Position 0 on the diagram furnished by *l'Automobile* is neutral. In position 1 the steering wheel has been pushed forward, the second roller has contacted the single front wheel and the car begins to roll forward. Returning the column past neutral (position 2) allows the largest roller to contact the wheel, increasing the speed (on up to 36 mph with the 125-cc one-cylinder engine!). Pushing the column forward again forces the forward roller onto the tire, presumably acting as a brake and reverse, all rolled into one.

—Wall Woron

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Chevrolet V-8 Powerglide	12.3	7.3
Buick Century	9.8	6.4
Mercury Merumatic	11.9	7.5
Chrysler New Yorker	10.8	7.6
Thunderbird	9.5	6.2
Dodge V-8 Powerflight	14.5	8.7

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## OPEL WAGON

continued from page 35

Mr. Riedel's figure of from 25 to 35 mpg might be just a little bit on the high side. The Opel Rekord sedan is lighter by about 175 pounds, and although it had nearly

30,000 miles showing, it is not likely to have less fuel consumption than this heavier wagon. The engine specs showed the same arrangement of main components.

But up to 30 mpg is excellent for a car that is quiet, has comfortable foam-rubber-based seats with durable plastic upholstery, can be at highway speeds in enough time for anyone but a drag racer, and carries enough luggage to last for a long vacation.

Outwardly there's strong resemblance to recent Chevrolets. The grille resembles that of the '55 Chevy while the rest of the body could be mistaken at a distance for one of circa 1950-51. The hood line is fairly low and persons of average stature will find they can see the right front fender

easily. The seats are chair height and both are bench type. Since this wagon is a two-door (there is no four-door wagon in the line), the front seat backrest is divided for entry to the rear seat. The doors are very wide and entry is unrestricted by any wrap-around windshield or similar nonsense. Opel does not skimp on quality of construction. The doors shut with a solid sound, and every Opel I've driven has evidenced, by lack of rattles, the reason why all GM overseas-built cars (as well as those of Ford) use the unit structure.

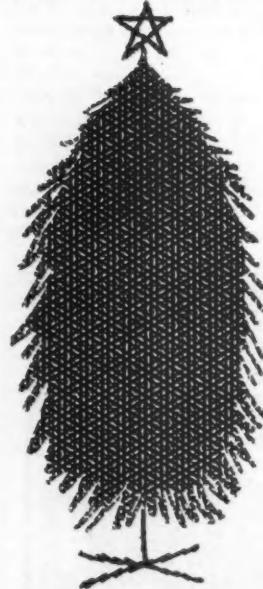
Women who like to bring half the supermarket's stock home in one load will appreciate the Opel wagon's side-hung rear door—it opens like a pantry door and the interior will hold as much as the average family is ever likely to require. Frankly I'm not sold on side-hung station wagon rear doors because loading space, lengthwise, is limited without the additional platform space afforded by a drop tailgate. With the rear seat erected (it folds like those of domestic wagons) there is exactly three feet of space to the end of the flooring. But, with the back seat dropped this floor space becomes five feet on the nose. It's an easy matter to drop this back seat rest; it latches down on each side by a twist of the centrally located folding lift handle. For the average camper this five feet of space would not be enough length for comfortable sleeping unless he made like a pretzel.

The rear wheel arches intrude upon interior width, too. Thus restricted, the rear seat of the Opel can seat two adults respectfully, and legroom with the front seat in the mid-point of its five inches of fore/aft adjustment is quite adequate, though by no means enormous. Three sub-teen youngsters, though, will find plenty of rear seat space; the front seat will handle three slender adults nicely, but for adults of average size, this is a four-passenger car. If more cars had their wheels at the corners à la DS-19, they, and this Opel, would be six-seaters regardless of size.

Quality control must be considerably better in the GM-affiliated Opel factories than it is here, for this car, sworn to be a run of the mill issue, showed absolutely none of the usual defects in workmanship or assembly. The cloth headliner was as well installed as any I've seen on a '58 Olds and the exterior finish and trim has a glass-like look reflecting great care in the preparation of the metal and the application of the paint. The chrome is definitely more thickly applied than on most domestic cars, and is sufficient to functionally highlight the good styling. The bumpers should be able to cope quite well with domestic parking lot attendants' driving abilities.

The driver has an easy task in this Opel. From lock to lock it's just 3½ turns and the car will turn inside of any of the early and similarly sized Ramblers. Ride is fairly soft when three or four persons are aboard, but just slightly choppy with driver only. The front suspension is by in-

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dependent coils, the rear by widely spaced leaf springs with angularly displaced shock absorbers of the familiar telescopic variety. The small 13-inch wheels carry cushiony 6.40-section tubeless tires of Teutonic manufacture. I suspect that the front end had never been properly aligned as caster action was not what one normally expects of a German car. Cornering hard produced pronounced leaning—no plowing—but this was not noticeable to the occupants. Panic stops induced considerable nose dive with one person in the front seat, but this was reduced to a minimum with three kids in the rear seat and a big dog holding down the tail end.

The instrumentation had been altered to indicate miles per hour (the Opel enjoys a considerable following in Britain) and the speedometer face included an odometer; the water temperature indicator was ticked off in the centigrade scale and the fuel gauge was conventional. Warning lights flashed to signal oil pressure and generator charge condition and all these instruments are directly in front of the driver—those with dials have white letters on a dull black background and do not reflect at all in the windshield. The headlight beams dip conventionally by a floor tripper, but this item—in the usual place—sticks up so far above the sloping floorboard that it looks like an afterthought.

The three-speed synchromesh shift is standard—there is no option to my understanding (this car could use an overdrive with an altered rear axle ratio)—and the pattern is standard American "H" gate with just about the easiest shifting I've ever experienced on any column shift. Downshifts from third to second gear were made up to an indicated 55 merely by revving high without double-clutching. Acceleration times could be cut with a well run-in car, I believe, since this car was still fairly tight with just 1819 miles on the odometer. It was necessary to snap into top gear just a split second before the needle hit the 48-mph mark, else a flat spot impeded the needle's rotation to the true 45 mph we were striving for. To 50 mph took exactly 20 seconds but from there, on up to 60 mph (true), the time stretched to nearly 27 seconds. In the lower speed ranges, from 30 mph up, there was very little advantage, on level ground, to be gained from shifting down to second gear. On level ground starting in second gear seemed a strain with two adults aboard—this is a first gear starter for sure.

The brakes are fairly large, enough so that the weight/brake area ratio is better than average on cars in its class even though the weight of this wagon is comparatively more than that of similarly sized economy sedans. The binders worked very well and straight stops were made on both dry and wet blacktop with no tendency to slew around. But I still think that a 13-inch wheel is just a bit too small—I'd like to see how this baby would handle with 14-inch wheels as it would be simple

enough to lower the integrated body-frame unit to retain the present height.

Frankly, I'd like to own one of these little wagons. I think I'd try a set of Air-Lifts in the front coils and possibly slightly stiffer shocks in the rear. Then I'd investigate the possibility of shaving the head enough to raise the compression ratio at least 0.6, fiddle around with carburetion and maybe add an electric fuel pump.

This car would appear to offer a lot. Domestic driving conditions would seem to point up the need for moderate improvement in performance. But, if imported in numbers, as I believe it should be, it would no doubt include the same sort of neo-production modifications that I just mentioned and that are applied to many of the other European makes. Then, with a competitive price and an overdrive unit, I think this little station wagon could give the Ford International lads a few headaches as regards their Escort and Squire wagons. Right now, though, GM disclaims any interest in the small foreign car business, preferring to imply that they are afraid they would be inviting headaches of a different variety; but by the grapevine I hear of an outfit in Los Angeles making a business of stocking Opel replacement parts.

So if this attractive rig appeals to you, I'd suggest a letter campaign which I will personally volunteer to place, letter by letter, in the hands of the appropriate East Coast GM persons. With a little more moxie, this car could be the sort that the Rambler started out to be before it grew its bustle and forgot to Sanforize its wheelbase.

—J.H.W.

## PERFORMANCE

### ACCELERATION

From Standing Start  
0-30 mph 7.0 0-45 mph 14.5  
0-60 mph 26.9  
Quarter-mile 25.6 and 55 mph

### PASSING SPEEDS

30-50 mph 14.1

### FUEL CONSUMPTION

35 mpg in highway driving at average  
speed of 50-55 mph  
25 mpg in city traffic

### TOP SPEED

Average of 2 runs 74 mph

### SPEEDOMETER ERROR

Read 31 at true 30, 48 at 45,  
65 at 60, and 82 at 74

## SPECIFICATIONS

**ENGINE:** Ohv 4. Bore 3.15 in. Stroke 2.91 in. Stroke/bore ratio 0.92:1. Compression ratio 6.9:1. Displacement 90.8 cu. in. Advertised bhp 51.3 @ 4200 rpm. Piston speed @ max. bhp 2037 ft. per min. Max. torque 78.8 lbs.-ft. @ 2000 rpm.

**GEAR RATIOS:** 1st 3.57, 2nd 1.68, 3rd 1.00, Reverse 3.57.

**REAR AXLE RATIO:** 4.22:1.

**STEERING:** Turning diameter 34.8 ft. Number of turns lock to lock 3½.

**WEIGHT:** Shipping weight 2083 lbs.

**TIRES:** 6.40 x 13.

**PRICES:** (Including suggested retail price at New York port of entry, federal tax and delivery and handling charges, but not freight.) Olympia Rekord sedan \$1995 (including heater), Rekord station wagon approximately \$2300.



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but 3 Bugattis

## TYPE 46 BUGATTI

THE TYPE 46 BUGATTI was the monster of 1929, exceeded only by the Royale. Its two-door convertible club coupe body is mounted on a 138-inch chassis. Like all other Bugs, it has right-hand drive, and takes some orientation before driving it. Otto blithely passed it off as being "very simple. You have two levers here (extreme right of the dash); one is the throttle, one is the ignition advance. You open the throttle slightly, put the ignition control between full advance and full retard, and pull out the choke button. The ignition key is the starter (a key that is interchangeable among all Bugs). You press it in, and the engine fires. After it warms up slightly, you retard both the ignition and throttle." As he did this, the loud throaty roar became the ka-chug, ka-chug of a powerful motor launch.

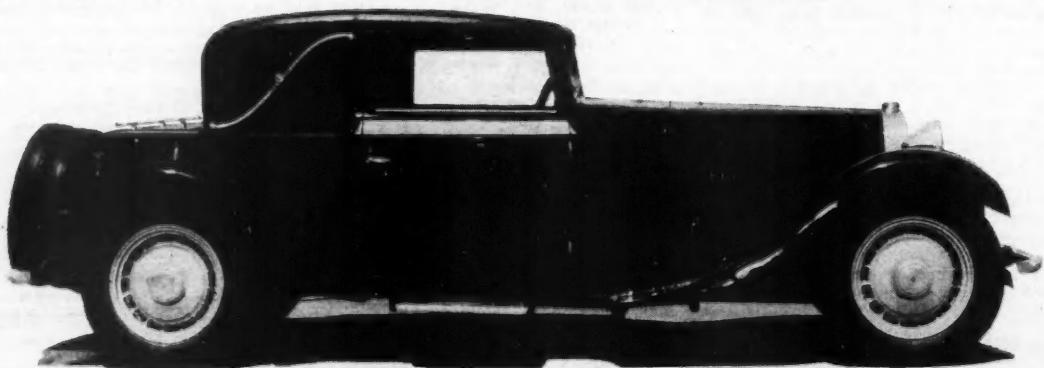
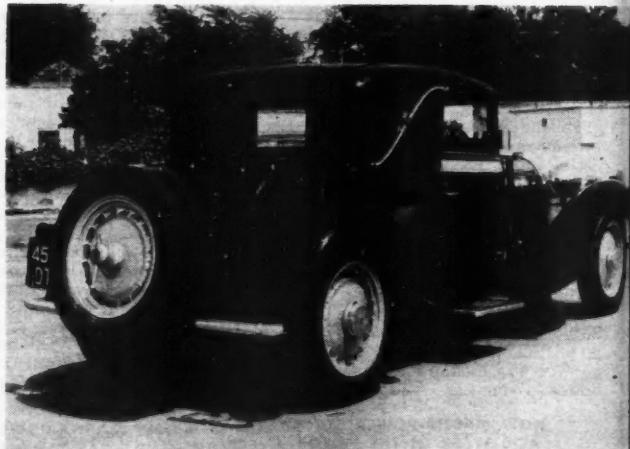
Steering is phenomenal for such a heavy car. Get rolling above five mph and it becomes so easy you'd swear it has power steering. It's exceedingly quick, taking about  $\frac{1}{4}$  turn of the wheel to get around a 90-degree corner.

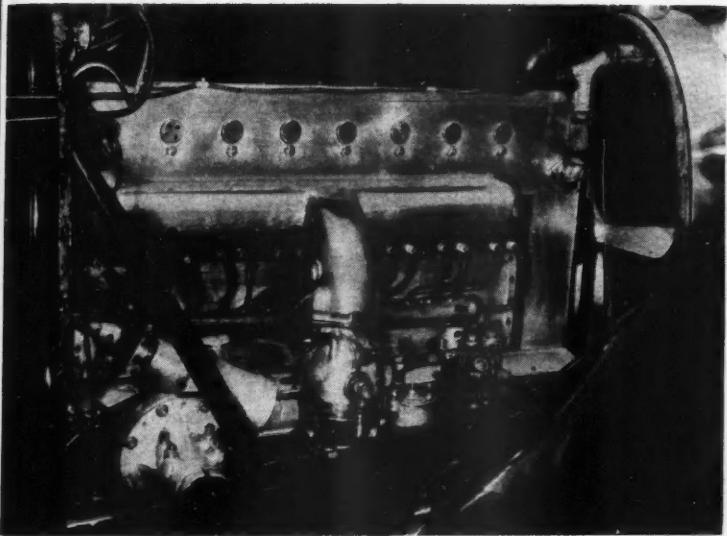
**B**UGATTI. A wondrous name that rolls off the lips of aficionados with a reverence usually reserved for things that are sacred. Bugatti. About whom and which more truths, half-truths and legends have been written than about any other name and marque. Bugatti—*Le Patron*, the man who knew as much about building fabulous cars as he did about breeding horseflesh. Bugatti—the car with as many temperaments as its temperamental progenitor.

For the past few months I've been watching with interest the acquisition by Precision Motor Cars (Beverly Hills, Calif.) of one after another pre-war Bugatti. The first one I knew Bob Estes and Otto Zipper had brought into the country was a beautiful and diminutive 35-B. Then came a Type 46, a 55, a 57-C, and another 55. And more are on the way.

"Why not," I asked Otto and Bob, "give our readers the enjoyable experience of going along with us while we *drive* one of the Bugs?"

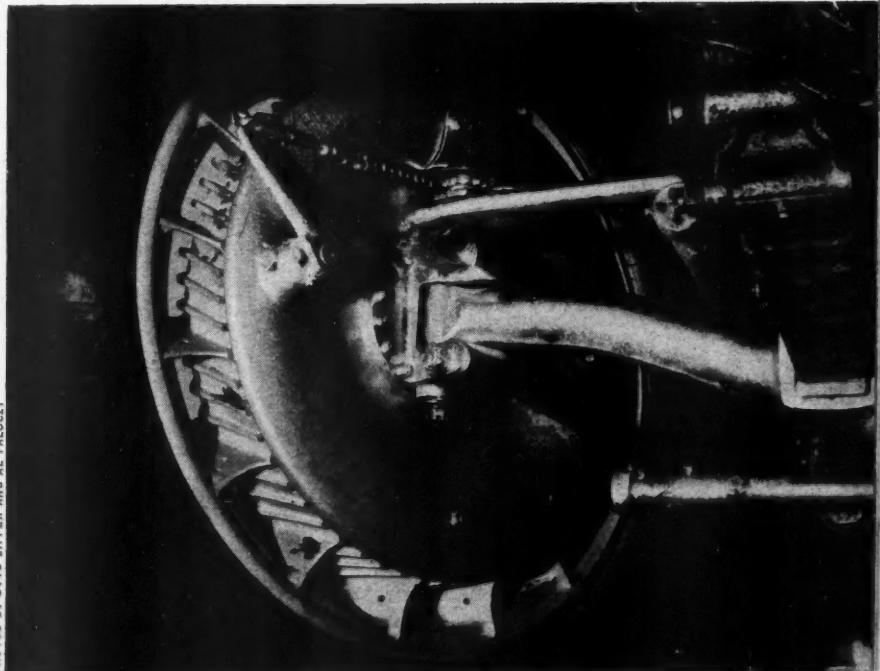
"Why not three?" they said. "We can let you drive the 46, the 57-C, and the 55." And that's how I wound up one weekend not long ago climbing in and out, over and around these three Bugs. It was a day to remember.





FRONT SEMI-ELLIPTIC springs go through the one-piece front axle in typical Bugatti fashion. Damping is by friction-type shock absorbers, controlled for "hard" and "harder" ride (there's no such thing as a "soft" ride on a Bugatti!) by a cable control leading to a rheostat-like knob on the dash. The large brake drums are finned to cool down the terrific heat generated when you push with all the leg-power you have to bring the 4200-pound car to a halt. As Ettore Bugatti said, "I make my cars to go, not to stop." Mechanical brakes were very much the rule on Bugs. Roller bearings keep the 20-inch aluminum wheels rolling so free that when Otto jacked up the front end and spun the wheels, they still spun 5 minutes later!

PHOTOS BY OTTO ZIPPER AND AL PALOCZY

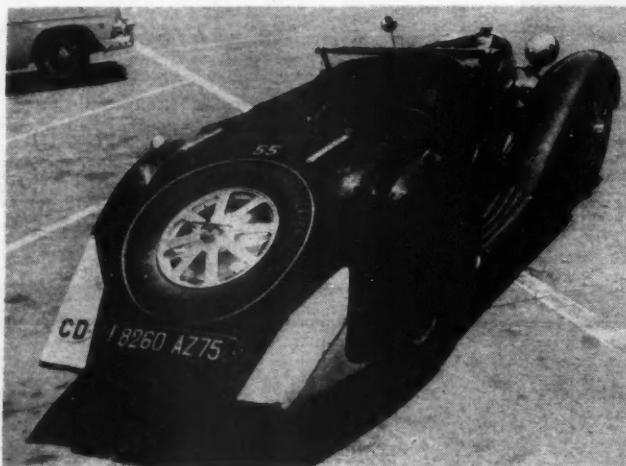
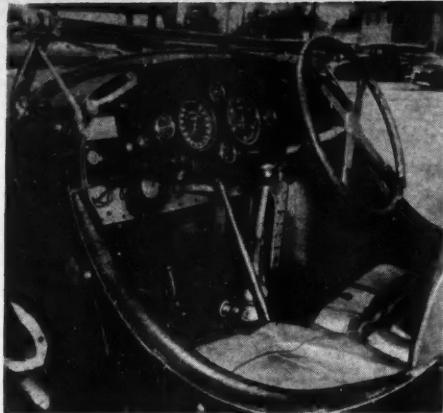


THE TYPE 46 ENGINE is a huge (by 1929 standards) 5.35-liter (326.5 cubic inches) model, has a single overhead cam, three valves for each cylinder, and dual ignition, with two plugs per cylinder. The large updraft carburetor sprays its fuel/air mixture through a beautifully designed single manifold to the eight cylinders. Machining and workmanship are the finest. It's a relatively low rpm engine, putting out 120 horses at 3400 rpm, that will idle in top gear at 250 rpm. To demonstrate this point we slowed down as low as the car would go (which was four mph), retarded the spark, and it chugged along with nary a buck or jerk. Full-throttle acceleration brought as smooth a takeoff as you'd get with Dynaflow.

The three-speed gearbox is at the rear axle, uses straight-cut gears, and is shifted by a long shaft running from the floor shift lever. It's a standard H-pattern, with first gear in the lower right, reverse in upper right. Hitting each gear without clashing takes some getting used to.

continued

INTERIOR OF THE TYPE 55 BUGATTI is tight for two, with right-hand drive, floor gearshift, and just barely enough room to step on the controls without stepping on your own foot. The throttle is between the clutch (left) and brake (right). Reason pointed out by Otto is that in racing competition, when you intend to downshift you first brake down with your right foot (and you need lots of leverage with these mechanical brakes!) declutch and throw the lever into neutral. With the same clutch-foot, you rev the engine, declutch again and slam the lever into the next lower gear. Starting this magneto-equipped car is no particular problem: you pull out the "kill" button, pull out the choke, push in the starter key, and it should fire. Shifting takes practice because of the straight-cut gears in each of the 4 speeds forward. For reverse you pull out a knob on the front, lower side of the lever, then push the lever forward and up. Bugatti apparently changed his shift patterns from car to car; this one has first on the lower left of the "H" and fourth on the upper right.

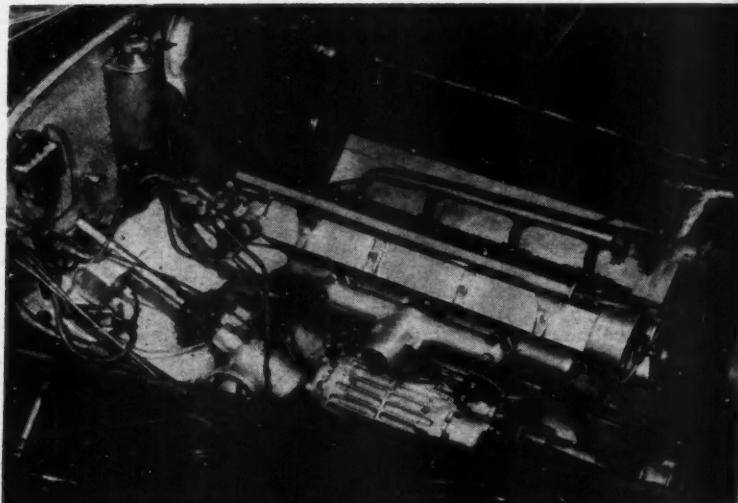


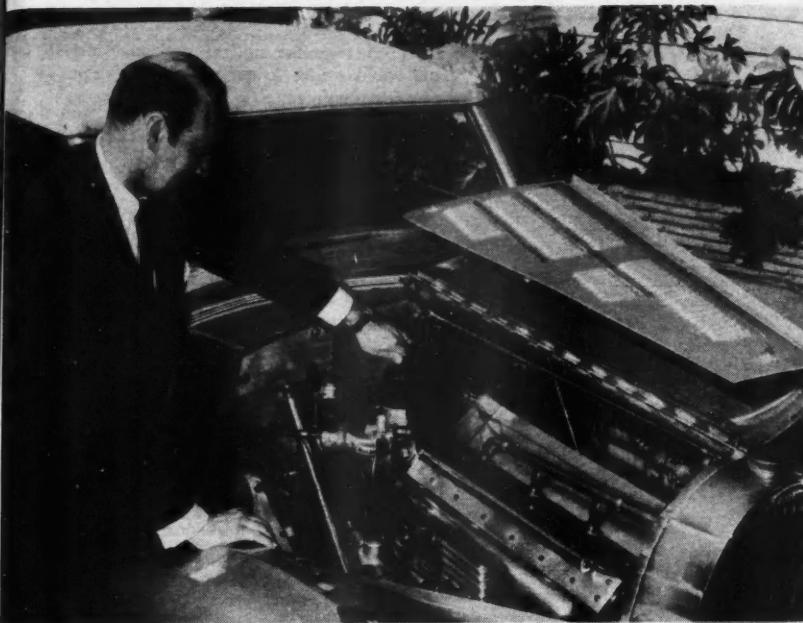
## TYPE 55 BUGATTI

THE 2.3-LITER ENGINE of the Type 55 is basically a de-tuned Type 51 engine, and to further confuse the issue, it's mounted in a Type 54 4.9-liter Grand Prix chassis. The 138.5 cubic inches of displacement is divided among eight cylinders, each with two valves driven by twin overhead camshafts. Bugatti's own Roots-type two-vane blower is driven from the front at crankshaft speed. It sucks the fuel/air mixture from the updraft carburetor and boosts it to the manifold at up to 12 pounds pressure. The crankshaft rotates in roller bearings safely up to 5000 rpm.

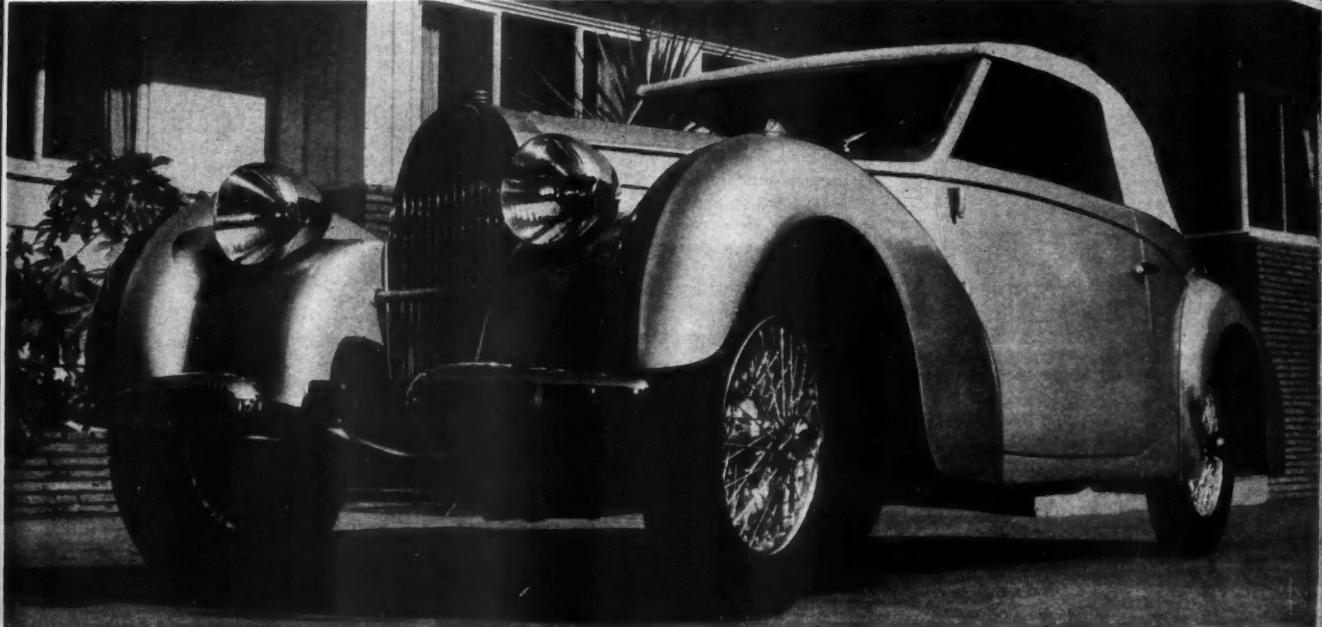
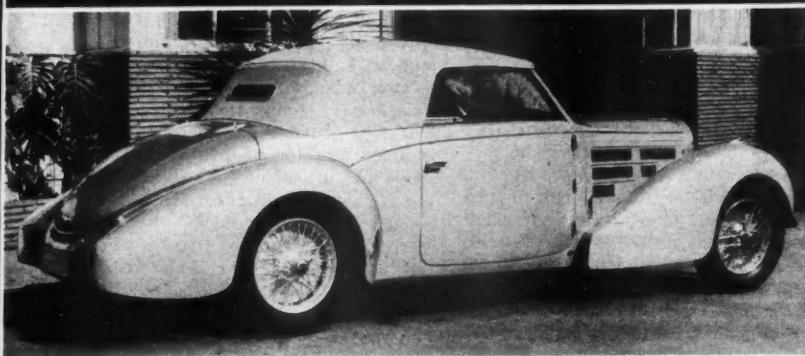
THE 55 ROADSTER body is typified by the lack of doors, but as Otto pointed out, the tail end and fenders of this roadster were modified. The area back of the front wheel was filled in, and rear fender skirts were added. Usually the back end was rounded and two spare tires were put on, whereas this one has just the one sunken into the streamlined deck. The body is on the frame of the Type 54 Grand Prix car.

Cornering ability of this brute is simply fantastic. Not knowing the car too well I didn't push it through the turns; I asked Otto to take over and he handled it like a master. He would slide into corners, through them, go into them hard without sliding, then let drift—you name it, he and the Bug did it. And this was all with the two best cylinders out of commission because their plugs were fouled. With the windshield folded flat, the air rushing by your ears and the supercharger's scream pounding into them, it makes one think of what it must have been like to drive down the dirt roads of Italy in a Mille Miglia or Targa Florio. Time to take this 1933 Bug to 60 mph is about 13 seconds. It can do 99 mph in  $\frac{1}{4}$ -mile, 112 mph in top.





TYPE 57-C BUGATTI

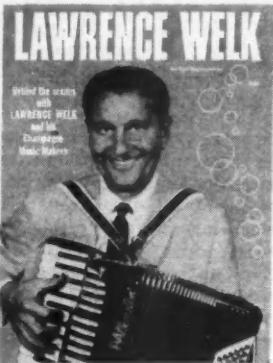


HERE'S A JEWEL—one that makes Bugatti lovers go into ecstasy and spins the heads of those who (forgive them!) don't know what it is. This 57-C, vintage 1938, was combed in detail by the Bugatti factory, and sports an immaculate 4-passenger Gangloff convertible body. The superb cornering characteristics set up by the typical semi-elliptic-solid-front-axle and quarter-elliptic rear springing were retained this model year. Wheelbase is a solid 130½ inches, which cradles you in a comfortable ride unsurpassed by anything built today. Top speed is 105. A concession to progress in brakes was finally made on this model—it had a hydraulic system, with independent master cylinders for front and rear pairs of brakes.

IN THE PHOTO AT TOP LEFT, Otto Zipper has his left hand on the dual breaker distributor of the single spark plug system for the 57-C engine. Like all Bug engines, it's an eight, and has twin overhead cams. Displacement is only 199 cubic inches, yet with a low boost ( $\frac{3}{4}$  pound) Roots blower, it gives 160 horsepower (with some later engines going as high as 175).

TWO MORE BUGATTIS I've got my eyes on are the black Type 55 convertible modified for Jean Bugatti and the 35-B Grand Prix car. The Type 35-B might have been one of those race cars that helped foster the "temperamental" tag on Bugs. Many of them ran into difficulties that didn't allow them to finish a race, but this one runs sweeter than any race car I've ever heard. I'm just dying to hear it from behind the wheel.

—W.A.W.



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## HOW ARE YOU GOING TO BUY A NEW CAR?

continued from page 39

\$10 difference. This impossible situation results from the almost complete breakdown of normal buyer and seller relationships in one of our nation's most important mass production and mass consumption operations.

### Franchise Operation

In the mass distribution of automobiles, financing is as vital as the blood in your body. The franchise under which a dealer operates usually requires that he accept a stated minimum number of cars each year. The factory expects payment for these cars as they are shipped. But very few automobile dealers (less than 10 per cent) have enough money to buy their own inventories. Most dealers rely on wholesale credit from financing companies to "floor" their new cars for them. In effect, the dealer pays only a monthly interest-like charge to buy and display the cars he has for sale. When establishing a limit of credit for a dealer, his financial condition and volume of sales are considered to be the most important factors.

Some banks offer the same rate (4.5 per cent) to all dealers with whom they do business. Other lenders vary the rate in relationship to the number of cars sold each year. Once a limit of credit has been established, the auto dealer is able to stock a 30- to 60-day inventory, based on his anticipated sales of cars. The factory is notified of this credit arrangement and it ships cars directly to the dealer, which are then paid for by the finance company or bank. The cars are financed 100 per cent, usually on the basis of 90-day trust receipts bearing 4.5 per cent simple interest without any insurance provided by the bank. If the finance company or bank provides insurance, the "flooring" rate is usually five per cent. These trust receipts are renewed monthly, but around June of each year the dealer is expected to reduce the loan on each car by 10 per cent a month. Then if he gets stuck with a new car at the end of a model year he will still not owe any more on it than the car can be sold for. Dealer flooring is a huge part of the consumer financing business.

### Sales Financing

Sales financing (the handling of your car purchase contract) is where the big money lies for a finance company. Initially when you buy a car on time, the difference between the cash price and the time sales price is not really interest. Although often spoken of as six or seven per cent "interest," it is in reality a finance service charge set by the dealer at his discretion. It is

intended to make up the potential loss of bookkeeping costs and bad credit problems connected with purchase contracts. The usual rate for your car is six per cent, although many dealers may charge less (or more) depending upon the state in which they do business. The dealer generally sells your contract at a discount to the finance company flooring his cars. Meaning that if your contract calls for a total of \$2240 in payment, and his finance company's discount rate is five per cent, he will be paid \$2040.

Of this amount, \$2000 will be given the dealer or credited to his flooring account to pay for the car said dealer never really owned. The \$40 left over goes into a reserve account (more about this later). It is this \$200 finance charge you are paying on which the finance company operates, as the \$2000 has been paid the dealer or applied to his flooring account covering the car you purchased. This discount rate (in our illustration, five per cent) is sometimes based on the dealer's volume of cars sold and his financial integrity. In other cases it is the same rate for all dealers. It all depends with which institution the dealer is doing business.

A small portion of your contract, the leftover \$40, is credited to the dealer in what is known as a "reserve account." This money, varying from  $\frac{1}{2}$  to one per cent of the balance due on your contract, is given him for originating the transaction and to cushion his liability should you fail to pay for your car. These reserve account credits are held by the finance company until your contract is paid in full, at which time the dealer then receives the small sum remaining there. But if a dealer adds only \$40 every day (one car sale) to the reserve, the yearly balance is a staggering and profitable \$14,600. On which we could eat for a long time. There is no larceny to this, for the dealer is entitled to a portion of the finance charge because of the risk he assumes by insuring (agreeing to repurchase if necessary) your time payment contract.

Nearly 65 per cent of the cars purchased during 1955 were purchased on term payments. So don't worry about being unique when you set out to buy your car on time. The initial problem is one of price. Auto manufacturers do not establish an exact retail price for any car. Nor will they give you a retail price list if you write for one. The only thing they will provide is a factory delivery price schedule. Prices on American cars in any one locality are usually established by an organization of dealers handling that make car. These groups create what are known as "Suggested List Prices," below which they will not quote. However, a dealer is free to raise these suggested list prices to whatever heights seem desirable. Therefore, when you have decided on the make of car you wish to purchase, shop a num-

ber of the dealers by telephone and get the exact suggested retail price of your car and a separate price for each of the desired pieces of extra equipment. You will then be prepared to shy away from any dealer "packing" or using a phoney price list. Believe it or not, many dealers print their own very official appearing price lists and finance charge computation sheets.

#### Down Payments

"There's no substitute for equity in an automobile," said the vice-president in charge of automotive financing for one of the nation's largest banks. It not only holds true for the dealer but holds true for the purchaser. Many a person with a nearly new car has found it impossible to get rid of the car in an emergency, because he owed more on it than the car was actually worth. Although this is normally considered a dealer headache resulting from small down payments and over-long terms, a microscopic equity works to the disadvantage of a car purchaser. It would certainly seem wiser to buy a car with a substantial down payment and always know that you could never be stuck with it. If an emergency arose, the car would represent available cash rather than a burdensome payment to be met every month.

#### Getting the Right Terms

Terms of payment are something most people pay little attention to, but they are one of the most important facets of financing the new car. A rule of thumb used by most finance companies is that there is danger in any monthly car payment which exceeds 25 per cent of the family's monthly income. And if that is a good rule for money-wise finance management groups, it might be considered an even better rule for some of us not so sharp in balancing the check book.

Costs of financing a car vary all over the place. The rates quoted in our three examples at the beginning of this article are typical dealer rates. However, better financing is often available with just a little additional searching. Many banks offer four per cent financing if you are able to put 40 per cent down (or a trade-in equaling the 40 per cent) and pay off the car in not more than 24 months. Another advantage of such bank financing is that you may select your own insurance agent, which also reduces insurance costs slightly. Many automobile clubs are now entering the auto finance deal with terms of one-third or more down paid off within 24 months. Their finance charge (as different from interest) is usually four or 4.5 per cent. Usually, such clubs will perform this service for club members only (at a rate of \$7.50 to \$20 a year for membership) and insist you place insurance with the club at standard rates. Standard rate insurance is not quite so

bad as it may sound, for many insurance companies and auto clubs return to the customer yearly unearned premium dividends varying from two to 30 per cent, if the customer was not involved in an accident during the year. The latter case is certainly a substantial saving on insurance. Credit unions may be as low as two per cent.

When you're dealing with any lending agency it is worth keeping in mind that most lenders have different rates and charges, depending upon the customer's credit standing, the length of time the money will be out, the equity in the property and the type of property being purchased. They will do much more for you

on a standard American car than they will on a custom-built creation. So put your best foot forward and ask around for the most advantageous rates. By the way, a good source of overall finance information is your auto insurance agent. Although not in the money lending business he may be able to refer you to one of the many low cost, small lending groups.

This is big business. Almost one out of every three of the nation's 52 million car owners traded in his car during the year 1956, and almost 65 per cent of the new ones will be bought on terms. We just hope you don't have to hock your soul when trading for a new car in 1956 or '57. It isn't worth it.

—W.L.

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- Increases horsepower 15%
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- Prevents Ping



### TIME TESTED... PROVEN RESULTS

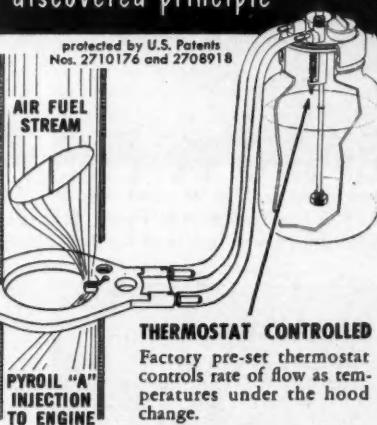
Two Test Cars—Mercury with 110,000 miles Oldsmobile with 150,000 miles, neither has had the head off—original rings, still going strong!

**A Midwest Highway Commission Report:** "We are equipping all of our trucks from 2-5 ton capacity with this oiler. We feel the installation of this oiler prolongs valve life and aids in the efficiency of motor operation."

**EASY TO INSTALL . . .** average installation takes less than an hour, gives protection for the life of the engine, no moving parts, nothing to wear out.

**Complete \$15.95 plus FREE, 1 qt. Pyroil "A" for the Top Oiler and 1-12 oz. can of Pyroil "B" for the crankcase.**

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### TRY IT AT OUR RISK . . .

If after thirty days, you are not completely satisfied, your money will be fully refunded.

If your dealer does not have a Pyroil Impact Top Oiler, send \$15.95 to the Pyroil Company, Inc., Dept. B-11, La Crosse, Wisconsin. Slightly higher in Canada write Pyroil Company, Toronto, Canada.

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City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

Make of car \_\_\_\_\_ Year \_\_\_\_\_

Model \_\_\_\_\_  Check if four barrel carburetor



## INSTALLING POWER BRAKES

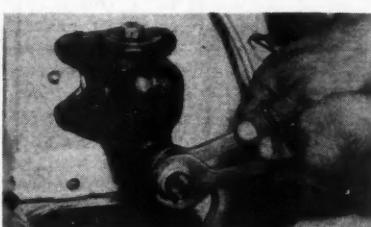
a photo story by Lester Nehamkin



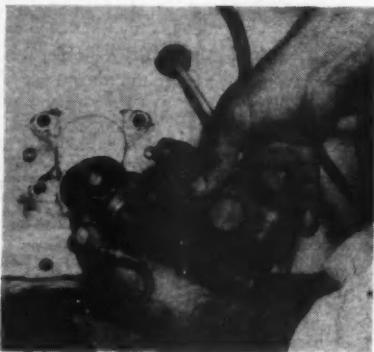
1. Having already purchased the correct model of the Stage-Matic Power Cylinder to fit your car, you remove the stoplight wires and loosen the switch.



2. Place a pan under the master cylinder to catch the flow of brake fluid, then carefully remove the retaining nut on the main hydraulic feed line.



3. Removal of the master cylinder junction block assembly is accomplished with two open-end wrenches, one each to remove the switch and junction block.



4. After removing four bolts holding the master cylinder in place, with a 1/2-inch socket wrench, pry loose the rubber dust cover and lift the unit out.



5. An exploded view of the junction box and stoplight assembly, showing the proper installation sequence of the two new copper washers furnished with the \$29.95 Stage-Matic unit. Be sure every part is immaculate.



6. Before the new unit is installed, the reservoir is filled (with SAE-approved hydraulic brake fluid only) and bled by depressing the piston repeatedly, until the fluid comes out clean and clear, and free of air bubbles. The unit is then placed in position, the dust cover fitted, bolts replaced and tightened.



7. Carefully replace and tighten the main hydraulic feed line, then firmly tighten the junction block assembly. Now, find someone to help bleed brakes.



8. A 3/8-inch box wrench is used to crack open the brake fluid bleed nut, as your assistant pushes the pedal. Now you're all set for really easy braking.

plete the exchange and bleed the lines. He agrees that the slowest Joe could easily do the job in less than an hour. Man, what a difference in braking action now! The pedal has a much softer feel, yet when it's depressed only a little further, wham—the brakes take hold—right now!



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GARDETTE absorbs the shocks of these minor bumps — even bumps hard enough to injure the passenger as well as damage the bumper. *No scratches ever appear on your bumper, no matter how many "minor" accidents you have.*

And just as important, when you "nudge" another car, you don't scrape any of his paint or chrome finish off, and there is no liability because there is no damage!

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If, after receiving your GARDETTE, you are unsatisfied for any reason, return it (unmarred) within ten days and we will promptly refund the full purchase price.  
(Dealers' inquiries invited)



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The GARDETTE rail lasts indefinitely, *at least* for the life of the car. If the black rubber strip itself should be damaged by too many accidents, it is replaced in minutes for a mere \$1.50.

#### HOW IS GARDETTE INSTALLED?

Simply . . . easily . . . quickly! A screwdriver and a drill are all the tools you need! It conforms to the shape of your bumper, no matter how complex, with almost no work at all. *Do it yourself* or have any mechanic install it in a jiffy . . . **EVEN ON WRAP-AROUND BUMPERS!** (Dealers' inquiries invited)

Only **\$29.95**  
for a FULL SET  
(front and rear bumpers)  
in smart aluminum and black  
**A PERFECT CHRISTMAS GIFT FOR THE MAN WHO CARES ABOUT HIS CAR**

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## **Motor Sports**

by Paul Sorber, Sports Editor



**G**RATEST of the current American drivers competing in sports cars and Grand Prix machines is young Phil Hill, who drove a factory-team Ferrari (No. 3) to first place in the Swedish Grand Prix for sports cars at Kristianstad. Maserati entered four cars, one of which crashed on the second lap with the D-Jaguar that won Le Mans. By lap 45, two of the remaining Maseratis had withdrawn with mechanical difficulties and Stirling Moss's car later caught fire, shattering Maserati's last hope. Hill's co-driver, Maurice Trintignant, was first over the finish line, closely followed by the Von Trips-Collins and De Portago-Hawthorn teams, giving Ferrari a clean sweep.

### **Saab Sonett . . .**

The photos below show details of the Saab Sonett Super Sport displayed at the Swedish

Grand Prix. The neat cockpit includes a 180-kilometer-per-hour (112-mph) speedometer and a 7000-rpm tach. The center photo is of the three-cylinder, two-cycle, 45.6-cubic-inch engine which develops 57.5 brake horsepower at 5000 rpm. To the right, the Sonett builds a smoke screen with burning rubber as it leaves the pits on an exhibition lap as part of the pre-race activities.

The manufacturer, Saab Aircraft Co., is extremely interested in putting the Sonett into production; primarily for the American market. It's expected to sell for less than \$3000, delivered! To gauge the public's interest, Saab's U. S. representative has offered a photograph and complete description if you'll send your name and return address. Write to Ralph T. Millet, Dept. MT, 130 W. 59th St., New York City.

### **Giants' Despair Hillclimb . . .**

Reminiscent of a scene of 40 years ago, William Pollock is green-flagged away at the start of this mile-long hillclimb located near Wilkes-Barre, Pa. His ancient auto is a 1910 Chadwick, one of the only two known to exist in the U. S. He also owns the other one, a Type 16.

Just below is that fabulous Texan, Carroll Shelby, at the exact split-second when he became the first man to drive up the Giants'

## **SPORTS CAR GRAND PRIX . . .**



Despair mile in less than a minute, setting a new record time of 58.768 seconds. The car is John Edgar's Ferrari GP.

### **Paramount Ranch Road Races . . .**

On August 18th, the California Sports Car Club, Inc., opened a new course at a Paramount Pictures film location ranch near Agoura, Calif. Laid-out in a hilly area that provides numerous vantage points for spectators, the narrow, twisting circuit is notable for demanding the utmost in driving skill.

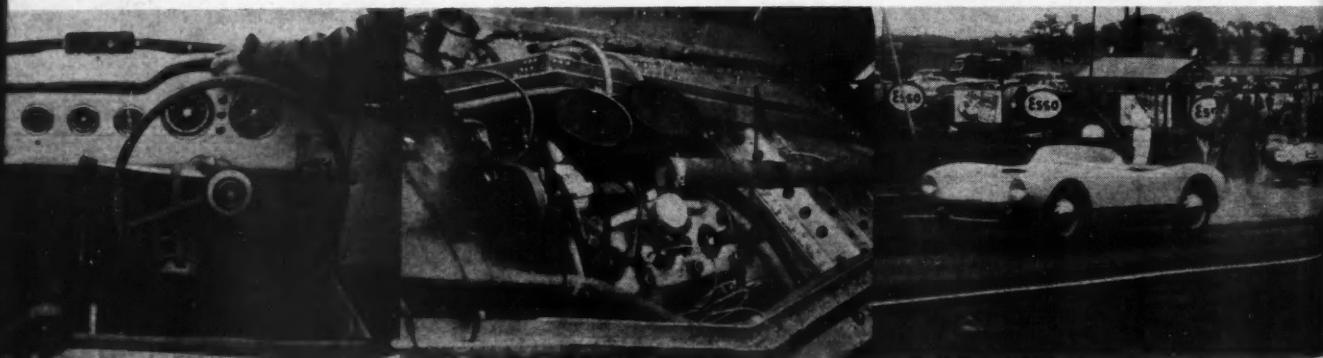
The man coolly tooling his Mercedes 300-SL along the side of the cut is John Colombo. He successfully completed this maneuver without mishap, after going just a bit too fast for turn five.

The same turn is more conventionally negotiated by car 181, Chuck Porter's Mercedes 300-SLS, which is about to be lapped by Richie Ginther in John Von Neumann's Porsche Spyder. Storming along behind are Frank Monice in a Climax-Lotus Mark VI, and Bob Bondurant in a Morgan TR-2.

### **Mt. Washington Hilleclimb . . .**

Chandler Lawrence picks up flight time in his 1500 cc Porsche as he speeds to a Class F winner's trophy in this National Championship event. Overall winner was ol' Carroll Shelby again, setting a new record of 10:21.8.

## **SAAB SONETT . . .**



## ... GIANTS' DESPAIR



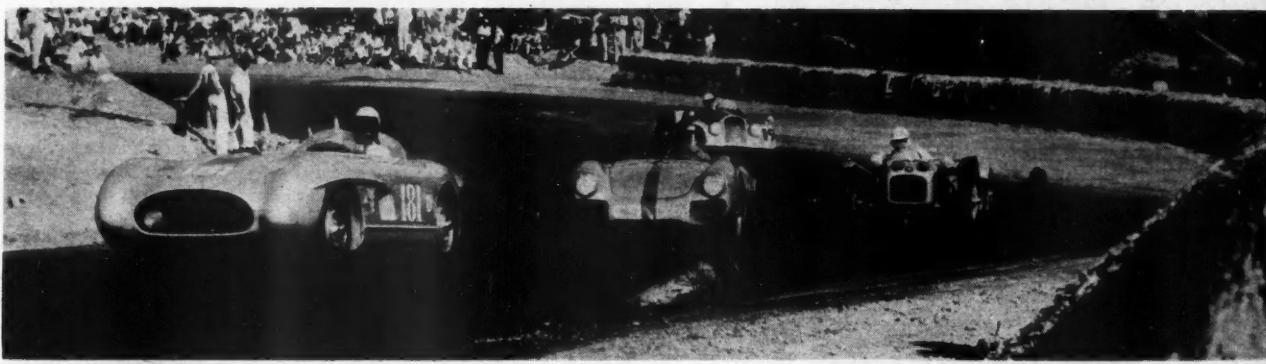
ACE HOFFMAN

JOSEPH HOGARTH



GEORGE ROBITSCHEK

## ... PARAMOUNT RANCH



BOB DOLIVO

what's  
coming up?

### october

- 17-27, 41st International Motor Exhibition, Earls Court, London, England
- 20-21, SCCA 11th Sewickley Hillclimb, Steel Cities, Pa.
- 20-21, CSCC Races, Pomona, Calif.
- 20-21, SCCA Races, Smartt Field, St. Louis, Mo.
- 28, Modena Grand Prix, Modena, Italy
- 28, SCC of BC Hillclimb, British Columbia, Canada

### november

- 1-4, SCCA Appalachian Rally, Hershey, Pa.
- 3-4, SCCA Races, Palm Springs, Calif.
- 17-18, CSCC Races, Paramount Ranch, Agoura, Calif.
- 18, SCCA Hare and Hounds, Steel Cities, Pa.
- 21-25, 4th Great American Mountain Rally, New York City

### december

- 3-16, Bahamas Speed Weeks, Nassau, Bahamas

## ... MT. WASHINGTON HILLCLIMB



RUSSELL C. BROWN

continued



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AND THE  
PORSCHE

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## STOCKS Hit the HAYBALES

NASCAR STOCK DRIVERS looked forward to Sunday, August 12, with unmixed apprehension. Until then, Elkhart Lake's magnificent Road America course, four miles and 14 curves of scenic, two-lane asphalt laid out on private property in European Grand Prix style, had been invaded only by Ferraris, Maseratis, and the like, in the hands of SCCA's road-race-wise amateurs.

The race was to be run clockwise, a fact which unnerved the gentlemen from the ovals who ordinarily never made a right turn. For

laps to retire with a great show of predeterminedly futile pit work.

The race was a revelation to Mr. Schroeder, drivers, Detroit engineers, and the disappointingly low number (10-15,000) of spectators alike. If ever the term "Detroit iron" was buried, it was at Elkhart Lake, for cars essentially similar to the ones in our garages proved their ability to negotiate a "sports car" course at speeds only slightly under those posted by Ferrari a month before.

The drivers were unanimous in their praise



DON MACDONALD

The ultimately victorious Mercury team arrives in the pit area, without fanfare but with excellent race-winning organization.

another thing, FIA approval of the event carried with it a requirement to open the field to European "touring" cars. The largest of these entered was the sedate Jaguar Mark VII sedan.

FIA Executive Secretary Hubert Schroeder insisted on carrying through with Saturday's elimination race, where the first 15 of the "touring" cars would be eligible to compete against the big American stockers the next day. At first, he would not believe that any American car could outperform even a Mark VII Jag on Road America's twisting circuit.

But by Saturday evening Mr. Schroeder was convinced that, FIA regulations notwithstanding, it would be highly dangerous to mix in the underpowered Europeans, for by that time 22 NASCAR drivers in five varieties of American sedans had all qualified for the big Sunday race at three-lap averages of over 70 mph (more than 10 mph faster than the Mark VII's winning time in Saturday's 100-miler). The net result, mainly to save FIA's face, was that a driver named Ansel Rakeström, from Wilesboro, N.C. took over the Mark VII on Sunday, diligently kept out of everybody's way, and finished 19th. For the same cause, a brace of Renault Dauphines putted around the course for a token several

laps of this new idea (to them) in racing. It was essentially a safe race; the field soon spread out so that there was seldom more than one man through a turn at a time. A few missed their turns, like Curtis Turner, but instead of bouncing off a guard rail into the teeth of the oncoming pack, they found themselves safely ensconced on top of the haybales.

The race was easy on tires. There were no blowouts and, as far as we know, no changes. Goodyear got an unexpected break when Mercury team manager Bill Stroppe, eyeing the wet track, switched to them because they presumably offered a better slick surface tread. This gave Goodyear their first major victory of a new racing career.

The race was hard on brakes. Many cars used deflectors to channel air to the drums. Some drivers, like Lee Petty, used up their quota of lining too soon and literally lost the race in a pit stop for adjustment.

Chevrolet drivers, on the other hand, suddenly found out what it meant to lose active factory support. It seems as though the makers of the "hot one" have run out of budget. Presumably, it will be renewed for next year's season, but the effects were apparent in the Chevrolet pits where one driver had to honk his horn to get attention. —Don MacDonald

### "ROAD AMERICA" 250-MILE INTERNATIONAL STOCK CAR ROAD RACE, AUGUST 12

FINISH	START	DRIVER
1	6	Tim Flock, Atlanta, Ga.
2	11	Billy Myers, Germantown, N.C.
3	17	"Fireball" Roberts, Daytona Beach, Fla.
4	8	Paul Goldsmith, St. Clair Shores, Mich.
5	9	Joe Eubanks, Spartanburg, S.C.

MAKE
'56 Mercury
'56 Mercury
'56 Ford
'56 Ford
'56 Chevrolet
'56 Ford

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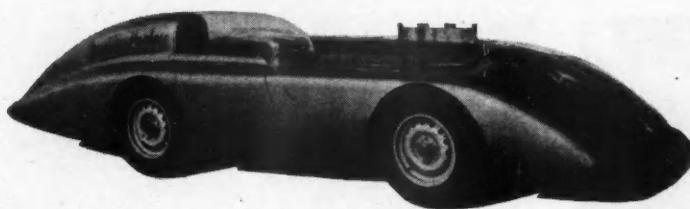
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PHOTOS BY DANIEL R. RUBIN

Ken Miles and Johnny Lockett drove this MG streamliner to four new American and International records this summer. The 100-hp Class F engine set these marks: 50 kilometers at 142.0 mph, 50 miles at 143.09 mph, 100 k. at 143.35 mph, and 200 k. at 144.19 mph.

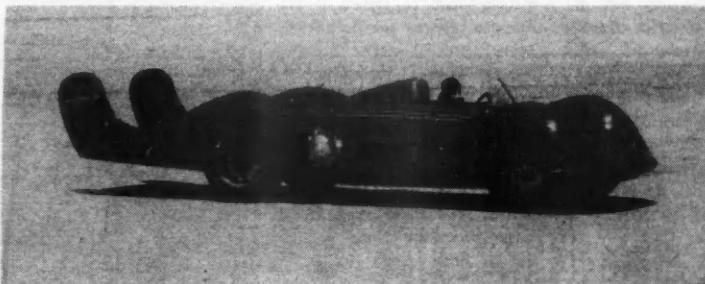
## BURNING the SALT at BONNEVILLE



This is the Austin-Healey streamliner that Donald Healey drove to a new world record flying-mile two-way average speed of 203.06 mph in Class D. The supercharged six-cylinder Austin A-105 engine produces 300 hp at 5000 rpm.



Donald Healey stands beside the Austin-Healey endurance car which Carroll Shelby and Roy Jackson-Moore drove, breaking 19 speed records which had stood as long as 16 years. Speeds averaged as high as 150.98 mph for 1000 kilometers (621.38 miles).



Renault of France broke the British-held record for turbine-powered cars, with a speed of 191.2 mph for the flying mile. We have the salt flats, the money, and the ingenuity, but not the records.



... in November **HR**

Inside the '57 Plymouth . . . here's the inside story, the inner workings of the radical, new Plymouth for 1957

Technical tips: Progressive throttle linkage for triple carburetion . . . Home welding's a cinch with modern easy-to-use equipment

Final Reports on the Drags—Kansas City Nationals . . . Ever-popular Bonneville . . .

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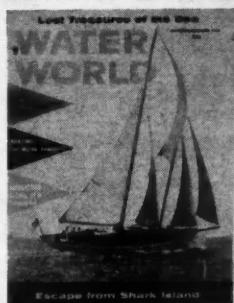
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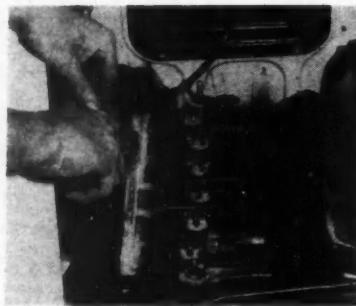
*a photo story by Lester Nehamkin*

THROUGH THE USE of a new line of synthetic metals, production and maintenance men, home mechanics and weekend "do-it-yourselfers" now can have at their fingertips products which will solve a wide range of problems. These are Okun's Poxalloy, Hydralloy and Cold Solder. Poxalloy is a super strength metal "glue," which can be used to cast, weld, braze, patch or coat. Hydralloy is a metal in liquid form for brush, dip, or spray application with excellent adhesion to metal, wood, concrete and most plastics. It is non-

corrosive and resistant to acids, alkalies and petroleum solvents. It is used as a galvanizer, a primer or an acid-resisting undercoat. The Cold Solder is a metal "putty" that sets hard in minutes and develops the strength, permanence and machineability of many metals. It adheres to metal, wood, plastic and concrete and can be used to patch pipes, cracked cylinder blocks, gear housing or cracks in any metal. The complete kit of Okun's synthetics includes Trigger (hardener for Poxalloy) and Liquator (solvent and thinner).



**HYDRALLOY**



An acid-corroded battery case is cleaned off with a steel wire brush, then painted with Hydralloy to provide permanent protection against recurrence.



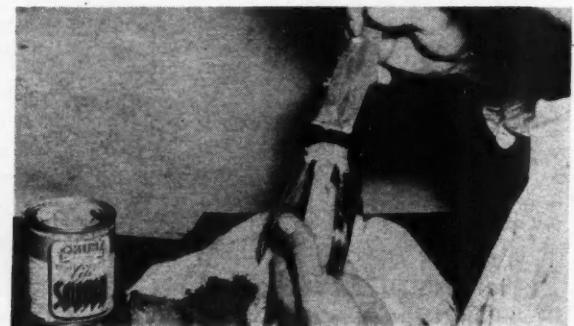
**COLD SOLDER**



Okun's Cold Solder is used here to fill a crack in a Mercedes bumper guard. The area around the crack is first thoroughly filed, roughened and cleaned. Cold Solder is then applied direct from the can in thin layers with a putty knife. The thinner the layers, the better the bond. A small metal strip is used under the crack to retain the semi-liquid solder in the crack while it begins to set. As many layers as



All rust and corrosion should be completely removed. Hydralloy is stirred thoroughly in the can, then applied with brush or spray gun. If it is too thick for the gun it can be thinned to the proper consistency with Liquator.

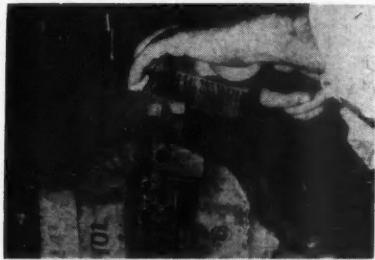


possible should be applied, to produce the strongest possible juncture. Approximately 90 minutes should be allowed between applications for drying. When the final layer has been applied, 24 hours should give the completed job time to set permanently, after which it can be filed, sawed, drilled, machined, sanded, buffed or feather-edged. Cold solder will prove excellent for repairing cracks in casting.





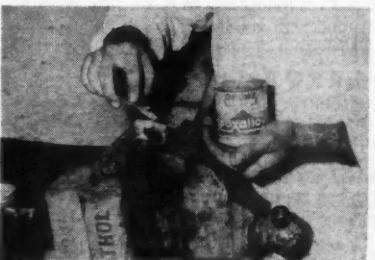
POXALLOY



When used in welding, Okun's Poxalloy proves to be a metal glue of great strength. It is being used here to repair a broken bumper bracket. The surfaces



to be joined are first cleaned and roughened with a steel wire brush, then individually coated with Poxalloy. They are then fitted together in a vise



and allowed to harden for from 24 to 120 hours. The most popular mixture is three parts Poxalloy to one part Trigger; they should be mixed thoroughly.



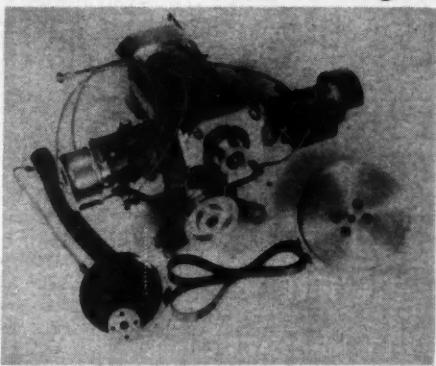
The ideal temperature for mixing is between 90° and 120° F. The higher the mixing temperature, the quicker the mixture will "cure" to maximum strength.

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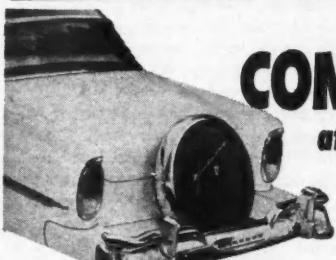
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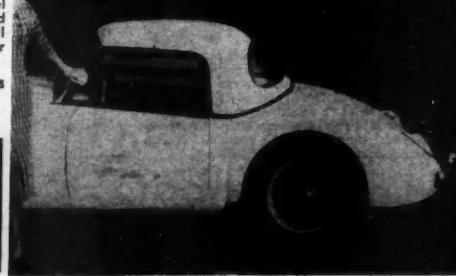
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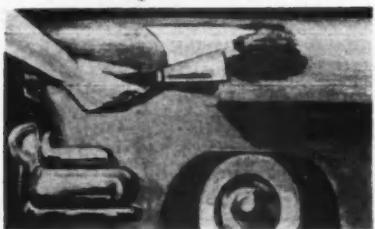
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## **T/SGT BOYD TESTS HIS**



## **Ford Popular**

Note: When Sergeant John E. Boyd wrote us about his car, we wondered if MOTOR TREND readers would be interested in this modest little vehicle. Since many of our servicemen abroad may wish to acquire a European "economy sedan" for service overseas, and since the "Popular" was (until the advent of the Atom—see "Glove Compartment") the world's lowest priced four-wheeled passenger car, we are presenting the sergeant's comments verbatim. Editor.

**T**HE '56 FORD POPULAR is the lowest priced English Ford series. I bought one through the AFEX at the base for \$783.30. I have had it a little over 5½ months and already have over 8500 miles on it. I thought you, and especially your readers, would enjoy a road test made by an average driver on an English car that has not been featured previously in your magazine.

The Popular is very well constructed. All body panels and doors fit very well. I have been the owner of several "popular-priced" American cars and none of them could hold a candle to this job. Windows are of the roll-down type and fit very tightly. At no time since I have had the car have I found any leaks. Glass area is surprising when you sit in the car, and it has safety glass all around. Front seats are of bucket type and covered with a polyvinyl material, as are the back seat and side panels. The roof is cloth covered. Floor covering is rubber, felt backed, and fitted to the car interior floor. Side vents are small but do a fairly good job.

The instrument panel is severe, but has no chrome and very few projecting knobs. The choke has a fast idle for cold starting incorporated in it. There is no glove compartment, but a shelf (same color as interior) running the width of the car, just under the instrument panel, is available for \$1.75.

The engine compartment, though small, is handy. All engine accessories are located for easy servicing. I scraped the carbon off my pistons in just 45 minutes. This included removing the head, distributor, generator, all head bolts, and all water hose connections.

The oil level dipstick is located in the old Ford tube and is very easy to reach and read. I even have a crank for the car, located under

the hood in a very accessible spot. Incidentally, a replacement engine, guaranteed, costs just a shade under \$60.

At speeds up to 45 mph the Popular handles very well. Steering is quick and responsive and there is not too much body sway or lean. At speeds over 45 mph and approaching the top speed I found that a very great amount of effort was needed to keep the



car under control. I personally would not care to drive this car at high speed for too long a period. It just isn't the car for prolonged speed.

I have conducted the economy test over a period of months. This test has included driving under all conditions and in all types of traffic that the motorist will find.

### **PERFORMANCE**

#### **ACCELERATION**

From Standing Start  
0-30 mph 9.0 0-40 mph 15.5  
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Quarter-mile 26.0 and 56 mph

**FUEL CONSUMPTION**  
40.5 mpg tank average for 350 miles

I am perfectly satisfied with my purchase. True, I don't have the comfort I had in my American cars, but with gas pegged at 56 cents per gallon I find that I make up the car's shortcomings when I pull up to the gas pumps. Maintenance and labor costs on this car have proved astonishingly low. In 13,484 miles I have had a faulty windscreens wiper motor (replaced free of charge on my six-month warranty), and a loose distributor wire. English roads are narrow and winding, so I really breathe a sigh of relief when I think of almost bringing over my V8. As my better half stated, "This trip we sacrifice quality for quantity." I am going to bring our Ford back to the U.S.A. when our tour over here is over. I for one am fed up with big cars, big gas bills, and big monthly payments for these modern gas eaters. I may get there slower, but I'll get there a lot more economically.

—J.E.B.







## WHY DOES HORSEPOWER KEEP GOING UP?

by John Booth, Engineering Editor

**Q.** I USED TO GET good economy out of my '55 car, and could drive it as fast as the '56 I now own. Why is Detroit going to even more horsepower? Bob Mason, Royal Oak, Mich.

**A.** This question has excited a good deal of interest from the \$100 jalopy buyer up to and including the Congressional levels of our government. It could be answered with oft-quoted phrases like "an attempt to get better fuel economy," "faster, hence safer acceleration," and "a continually increasing demand on engine horsepower to operate more and more accessories." While these stock answers have a definite basis in fact, many of the true reasons unfortunately aren't so simple because of the complexity of the buying public itself.

Every automobile manufacturer is in the business of making money. It just so happens that he manufactures cars to make this money and, in order to sell his product, it must meet the approval of a majority of potential purchasers. Most automobile buyers today want as much power as the manufacturer can supply. If one make offers more engine output at a competitive price than another, John Doe will buy the more powerful unit. This has created a competitive race among the manufacturers which, though accelerated the last few years, has been going on since the creation of man. Any of the Big Three could commit corporation suicide in one year by refusing to abide by the public's demand for high horsepower. He would be deserted by the thousands and left with a full production of under-powered vehicles that were actually not capable of enough performance to safely compete with today's mass vehicle movements.

The manufacturers have many times given the public their choice in horsepower output. Even today you can choose between a conservative six and a blazing, high output V8. Chances are, you make monthly payments on a V8.

The manufacturers, knowing the potential of high horsepower from a sales standpoint, have used it to the highest degree. Horsepower, as such, has no meaning in itself. In an automobile, what counts is the relationship between the horsepower output converted into torque at the rear wheels and the weight of the vehicle. To say a 1956 car has a horsepower output of 300 while the same model in '55 had only 275 is fine from a sales standpoint. This 25-hp increase doesn't necessarily manifest itself in comparably higher per-

formance. More power accessories could absorb a lot of this new output. Heavier vehicle weight could also absorb a goodly portion, or this extra power could have been used in more efficient valve timing or gear ratios to knock out some flat spots in performance and at the same time not increase overall performance, including a much over-emphasized phrase, "top speed."

Admittedly cars today will go faster than they did 10 or even five years ago. It is a natural by-product of better efficiency. They will also stop much better and accelerate fast enough to reduce accident exposure time (when passing) by as much as 50 per cent over the early post-war cars. This reduced exposure time becomes highly important when one considers the mass vehicle movements in our country that occur at least twice each day. To legislate a reduction in horsepower or require governors on cars, as has been suggested by certain legislative bodies, would upset this mass vehicle movement to the point that our whole economy would be in jeopardy. Nor would it reduce accidents. On the contrary, the accident rate would go up. Violent accidents too, because no matter how much you hear about speed being the big killer, the term is relative. Most fatal accidents occur at speeds under 45 mph and a governor or low output engine would do nothing but make you a sitting duck. Try driving on any expressway during the rush hour in a 1932 car in excellent condition or in one of several low-powered economy foreign makes. If you don't have nervous prostration, the other drivers will. Enough of these low performance cars would impair a mass movement that must occur in order to meet the pace we have set up for our economic survival. Try changing that and you will have the working man on your back in five seconds.

Even should legislation accomplish the seemingly impossible task of making the public accept less than that which our engineering and scientific brains can make available to them, fatal accidents will continue to occur and automotive engineering progress can take a back seat to the rest of the world. The tremendous increase in engine and accessory efficiency brought on by industry in continually meeting the public demand for a more responsive car is progress—pure and simple. To curtail progress is something that will be hard to sell to the American people, or any people.

Industry now finds itself in the peculiar position of being taken to task for creating excessive horsepower. At the same time they are confronted with the necessity of increasing it still more to give the public the responsiveness they demand in their cars plus power for all the accessories that are rapidly becoming standard equipment. One approach, of course, is to re-rate the engines, but no manufacturer wants to jeopardize his sales position by advertising less hp. At present no progress has been made through mutual agreement for all manufacturers to re-rate their engine output simultaneously.

Horsepower, as such, will increase as long as the public demands performance and accessories. New and smaller alloy engines in the 6000 to 7000 rpm range with reduced displacement will probably make their appearance in '58. These engines promise much greater fuel economy for city driving and are highly efficient. As to horsepower? Why, higher, of course.

**Q.** BUTANE. Can I convert my '56 Plymouth to burn butane instead of gasoline? Jack Farber, Merced, Calif.

**A.** Yes, there are several commercial conversion kits available. We suggest the type that will allow the use of both gasoline and LP gas due to the unavailability of LP gas in many areas. See July '56 MT.

**Q.** NEW TIRES. I need tires for my 1950 Ford and would like your recommendations on what type of tire to buy. George Johnston, Decatur, Ind.

**A.** That depends entirely on the type of driving you do. The July issue of MT has a most informative article dealing with tires which will most certainly aid you in your choice.

**Q.** WHERE'S THE SHORT? My '56 Ford Ranch Wagon has a short. No one seems to be able to find it. Could you possibly have had the same complaint before, and if so, what was the trouble? Leland Jones, Detroit.

**A.** Strangely enough, we have had. Naturally we don't know where your trouble is, but we suggest you check the wiring under the spare tire and at the hinged license plate light. This has been the culprit in the past.

**Q.** RUNS HOT. I purchased a '56 Chrysler last January. For some reason it seems to run too hot. I checked the fanbelt and thermostat, and flushed out the whole system, but this hasn't helped. Could you suggest what might be wrong? N.C. Harper, St. Louis, Mo.

**A.** Look for a collapsed water hose and be sure the radiator core is not plugged up with bugs or other debris. Also check for a proper water pressure seal at the radiator cap.

**Q.** FOUR-SPEED BOX. I want a four-speed gearbox in my Thunderbird. Is there a good box of this type made in America? Robert Little, Hammond, Ind.

A. The French Pont-à-Mousson box would be ideal (See Sept. MT). It is now available through the Pontex Pipe Corp., 116 John St., New York 38. Cost is \$394 plus taxes, duty, shipping, crating, and broker's fees.

**Q.** '56 BUICK COWL SQUEAK. My car has an annoying squeak in the cowl. I can't locate the exact area, but it seems to be in the right-hand corner. I tightened the cowl bolts but it hasn't helped at all. Any suggestion? Harvey Keens, Waco, Tex.

A. Yes, the squeak is probably in the windshield between the glass and the rubber seal. Your dealer has a glycerin-base lubricant that should stop the noise.

**Q.** MG-V8. My 1950 MG needs more power. I would like to know if there is an all-aluminum V8 engine that I could install in this car. I wouldn't mind a bump or two on the hood to accommodate the valve covers. John Morris, New York City.

A. Unfortunately no all-aluminum V8 engine is commercially available. We suggest you either forget it or install a reworked Ford 60 which would give you 110 to 120 hp. That's plenty for an MG.

**Q.** BROKEN DISTRIBUTOR CAPS. My car is frantic with broken distributor caps. I have replaced three in just three months. Is this a chronic condition with the '56 Dodge? Gene Baker, Los Angeles.

A. No, it isn't. You will probably find some foreign matter such as a burr, pebble or some such thing resting on the flange of the distributor head. This will prevent the cap from properly seating itself and will create a tremendous shear strain when the spring clips are engaged.

**Q.** WATER LEAK. My '49 Hudson has developed a water leak someplace that runs into the crankcase. I removed the head, and the gasket was in good shape. Could it be leaking through the water pump? I also notice one of the casting hole plugs is leaking. How can I stop this? William Stewart, Butte, Mont.

A. We strongly suspect a cracked cylinder block for two reasons. First, you checked the head gasket (of course you installed a new one when you replaced the head) and secondly, the plugged hole in the block is leaking. This is not a casting hole but an expansion plug to aid in preventing a cracked block in the event of freezing. You had better have this engine checked over by a competent mechanic immediately and get an early supply of anti-freeze for next winter.

**Q.** KNOCK-OFF WHEELS. Will they fit a de Dion rear end? Who makes a complete unit? Robert G. Ashmann, Jr., Boston.

A. Wire wheels can be used by installing proper hubs to receive the spline. There are no complete de Dion units manufactured in this country that would be satisfactory on a passenger car.

# SIMCA

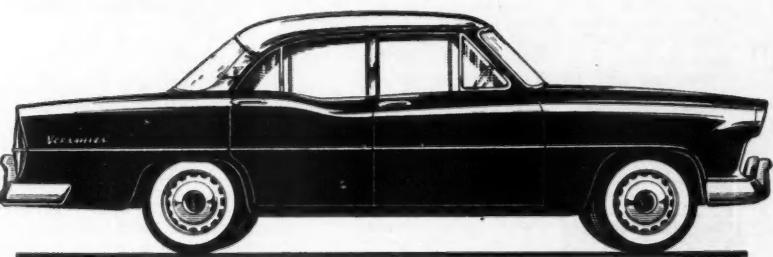


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- LF-40—'49-'51 Lincoln, FH to '32-'48 Ford-Merc-Linc., etc.
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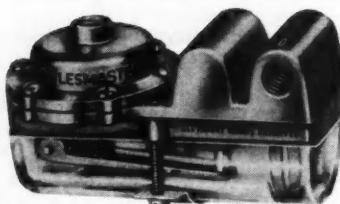
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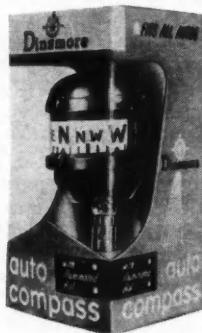
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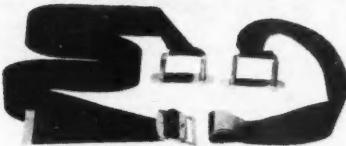


**HI-GLOSS** Sealer Towel is a high-grade Turkish toweling, treated with a secret chemical compound called "Pentatite." This chemical is claimed to penetrate into the pores of the paint and trim on your car, sealing the surface and preventing damage to the surface from sun, dust, oxidation, etc. Only \$1.98 from Chisholm Industries, Inc., Dept. MTA, Lynn, Mass.

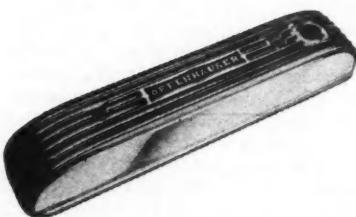


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is about the fastest way to clean whitewall tires. Simply spray it on with the handy sprayer that comes with the bottle, and wash it off with water. In less than a minute, scuff marks, dirt, and scum vanish. Non-flammable and non-injurious to clothes or rubber. Bottle (16 oz.) \$1 from Chemade Products Co., Dept. MT-9, 777 Bayside, Detroit 17.



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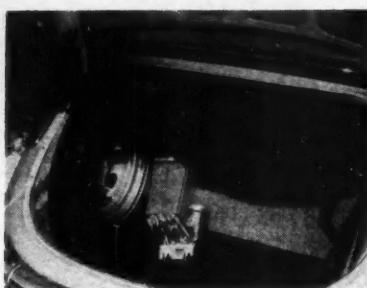
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## BMW V8

continued from page 34

and rear passengers step down about 2½ inches—and the whole arrangement places the center of gravity very low and still allows the floor to be flatter than any comparable front-engined cars with conventional rear drive.

The engine is mounted on longitudinal members welded, parallel, against the center crossmember. Not only does this provide an extremely strong engine mounting, but the mounts also act as additional stress-resisting frame components.

A full torsional suspension system is employed, the front wheels being independently hung on upper and lower wishbones mounted with rubber bushings. The telescopic shock absorbers are splayed outward at about 70-degree angles to the vertical and effectively control the twisting of the long, inboard-mounted parallel torsion bars. The rear suspension is by rigid axle mounted in an unusual three-point, rubber-bushed arrangement. The center rear axle control point is by a triangular member attached in the center to the top of the differential cage and at each side to the rear frame tubular crossmember. The outer extremities of the axle are controlled, in respect to fore and aft motion, by rubber-bushed ovals of spring quality steel and by the long telescopic shocks. The rear torsion bars are very long—they terminate at the front crossmember near the frame side sections—and they provide the additional security to prevent undue tendencies of the rear axle to wind up when taking off fast.

The ride is very smooth, almost completely silent even at rather high speeds on rough roads. It is perfectly controlled with virtually no road shock coming through the steering which is fairly fast, light, and by pinion segment gear.

Synchromesh is provided on all forward speeds and downshifting from second to first gear is as simple and quiet at 25 mph as is a downshift from third to second at anything up to an indicated 50. Nose dive on a hard stop is exceptionally slight and not noticeable to driver or passenger at all. Digging out fast results in a slight tire chirp for maximum getaway but so little rear end drop that it's negligible.

This is a fine car—it rates in every way with the Mercedes-Benz products in its

price class and, in my opinion, handles every bit as well with even less lean on corners than do comparable Mercedes sedans. We were unable to try any top speed runs; several passing-speed runs from 50 to 70 mph (corrected) were all the relatively high speed dashes that circumstances permitted (Oh! For the wide open spaces). The performance tables are sufficient, we believe, to convince the knowledgeable reader that this is a genuine 100-mph car without any obesity of body or tall claims as to horsepower.

Beneath the hood, all is of a high order with the finish superior to anything built domestically this side of the Continental Mark II; the BMW engine bin equals even that, we might as well say, with every detail seemingly getting as much attention from the quality control people as does the interior, which is jewel-like. The small tool box with its exquisite chromed tools is supposed to be fitted to the shelf alongside the battery, but it was in the trunk. The latter suffers somewhat in capacity because of the exterior styling, but even so it's capable of accommodating three or four good-sized suitcases and assorted smaller trivia. Here again the finish indicates the careful attention to detail that characterizes every visible part of the car.

The styling is traditionally Teutonic and strictly functional with no nonsense, unnecessary chrome, etc. Fresh air is induced through the small sub-grilles alongside the vertical radiator grille which marks kinship of the 502 with preceding BMW's of the last decade. There's a dash of the flamboyant in the sweep of the fade-away front fenders, and the streamlining of the tail end has been well studied at high speed, for the only sound is the whisper of the wind as the car moves along effortlessly. Gad, what a world this would be if such a car were to be produced by Detroit for three or four grand! We know now why BMW has fans.—J. H. W.

## PERFORMANCE

### ACCELERATION

From Standing Start

0-30 mph 3.4 0-45 mph 6.7

0-60 mph 13.7

Passing Speeds

30-50 mph 7.6 50-70 mph 11.4

### FUEL CONSUMPTION

22 mpg city and highway average

### TOP SPEED

103 mph (estimated)

### SPEEDOMETER ERROR

Read 31 at true 30, and 64 at 60

## SPECIFICATIONS

ENGINE: Ohv V8. Bore 2.91 in. Stroke 2.95 in. Stroke/bore ratio 1.01:1. Compression ratio 7.0:1. Displacement 157.4 cu. in. Advertised bhp 105 @ 4800 rpm. Piston speed @ max. bhp 2360 ft. per min. Max. torque 132 lbs.-ft. @ 2500 rpm.

GEAR RATIOS: 1st 4.41, 2nd 2.35, 3rd 1.49, 4th 1.0.

REAR AXLE RATIO: 4.23:1.

STEERING: Turning diameter 36 ft. Number of turns lock to lock 3½.

WEIGHT: Shipping weight 3120 lbs.

TIRES: 6.40 x 15.

PRICES: (Including suggested retail price at New York port of entry, federal tax, and delivery and handling charges, but not freight.) Four-door sedan approximately \$7300, equipped with radio (with automatically rising antenna) and fresh air heater-defroster.

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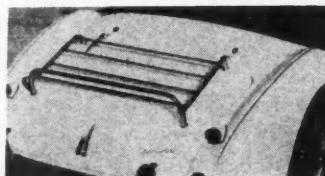
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2011 M.G.—TD, all models..... Tan	31.95	2061 M.G.—Series MGA..... Tan—3-ply canvas	31.95
2012 M.G.—TD, all models..... Black	31.95	2062 M.G.—Series MGA..... Black—3-ply canvas	31.95
2013 M.G.—TD, all models..... White	34.95	2063 M.G.—Series MGA..... White—3-ply canvas	34.95
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2022 M.G.—TF, TF 1500..... Black	31.95	2071 Ford Thunderbird 1955..... Tan	39.95
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2042 Jaguar XK120 to 1950..... Black	39.95		
2043 Jaguar XK120 to 1950..... White	44.95		

NOTE: "Most M.G.—TC, TD and TF models have been fitted previously with Tonneau Covers. When ordering replacement Tonneau Covers for these cars we recommend specifying "No Snaps." Tonneau Covers will then be furnished without the snap fasteners in the front flaps. This allows the customer to fit the Tonneau Cover to the existing studs, regardless of the previous make of Tonneau Cover, placing the front snap fasteners in the Tonneau Cover at the time of installation. A small punch can be furnished to the installing dealer for approximately \$2.00. Just specify "N/S"—NO SNAPS—after the part number.

Prices include Federal Tax



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These are sturdy. Fittings are of solid brass-machined. Thick plastic wings will not interfere with side curtains or top and may be attached without drilling holes.

PART NO.	LIST PRICE
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5005 Jaguar XK120, 140.....	19.95
5001 M.G., Models TD, TF, TF-1500.....	16.95
5002 M.G., New Model "MGA".....	16.95
5006 Nash Metropolitan.....	19.95
5004 Triumph TR2, TR3.....	16.95
5007 Thunderbird 1955.....	24.95
5000 Mercedes-Benz 190-SL.....	19.95

## SUN VISORS

These are made of polarized plastic. The fittings are of machined solid brass; triple chrome plated. Attachment is simple. No holes to drill.

PART NO.	LIST PRICE
5102 Thunderbird, Pair.....	\$17.95
5100 M.G., Models TC, TD, TF, Es. ....	6.95
5103 For new Model "MGA". Each....	6.95
5104 For Triumph TR2, TR3. Each....	6.95



## GRILLE GUARD FOR "MGA"

Curved solid steel bar is machined flat to fit spring steel support brackets. The support brackets are made of one piece construction, picking up the bolt that connects the overrider, and going back to an existing bolt in the frame. The entire assembly is connected with hardened steel bolts. The unit is simple to install—no holes to drill. Comes with complete instructions.

P-5400 Grill Guard, Triple Chrome Plated. \$29.95

LUGGAGE RACKS These racks are tubular steel, triple chrome plated, ensuring a durable finish in any weather. Fittings are cleverly designed, making installation very simple.

PART NO.	LIST PRICE
5301 M.G. Model TD.....	\$39.95
5302 M.G. Models TF, TF-1500.....	38.95
5303 New Model "MGA".....	38.95
5305 Austin-Healey "100".....	38.95
5306 Jaguar XK-120, 140.....	38.95
5307 Thunderbird.....	38.95

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Requirements are: copy limit of 25 words (not including name and address); 1st come, 1st served; we reserve the right to edit where necessary; we are not responsible for accuracy of description, although we will reject any misleading statements. This service is not open to commercial advertisers. No ads will be accepted if payment is not made in advance, and such communications will not be acknowledged. Only one CAR may be listed in any single Sell 'N' Swap insertion. This limitation will not apply to parts, catalogs, etc. The charge is \$4 per insertion. If your car is unusual and you have a photo of it suitable for publication, you may submit it with your ad. If we decide to print it there's no cost to you for the cut, but we'll have to decide which photos to use. Sorry, no photos can be returned.—Editor

## SELL

'41 LINCOLN CONTINENTAL conv. '54 Mercury engine with o.d. Body in perf. cond.; black with white top. Radio. \$1200. Thomas J. C. Kealey, 50-29 Broadway, Woodside 77, Long Island, N. Y. Phone Yellowstone 2-1175.

'39 CADILLAC special-bodied conv. cpe. 143" wheelbase, sidemounts, leather interior, wood moldings. Engine o-hauled, entire car in exc. cond., chauffeur-driven 16 yrs. Best offer. R. F. Weber, Box 302, Shaw AFB, Sumter, S. C.

'48 LINCOLN CONTINENTAL hdp. Good orig. cond. thruout; engine o-hauled. 2-tone dove gray body, dark gray top. Best offer over \$1750. William T. Dooley, Jr., 319 S. 4th St., St. Louis 2, Mo.

'37 PIERCE-ARROW V-12 limousine. Engine exc. with o.d., rod inserts; drive anywhere. Needs paint, uph. \$400. A. R. MacGregor, Rt. 3, Box 60, Mabury Rd., San Jose, Calif.

'48 LINCOLN CONTINENTAL conv. with '51 Lincoln engine. Very nice thruout. \$1650. James Jennings, 910 Chelsea Ave., Dayton 10, Ohio.

'25 STAR rumbleseat cpe. Restored. \$375 or best offer. Also tonneau windshield for touring car circa 29, trunk for '29 Lincoln. F. Gibbs, 102 Lane Ave., West Caldwell, N. J.

'27 BUGATTI Type 43. New paint, top, tires, kingpins, chrome, etc. Spare crankshaft & other parts. Have too many cars, getting married, must

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'27 BUGATTI Type 43. New paint, top, tires, kingpins, chrome, etc. Spare crankshaft & other parts. Have too many cars, getting married, must



sell for best offer. Larry Knaack, 16 N. Vail Ave., Arlington Heights, Ill. Phone CClearbrook 3-2100. CROSLEY ENGINE. Cast iron, bored .040. Sound, but needs top o-haul. \$50 complete. Also good used transmission \$15. F.O.B. Midland. D. W. Gilbert, 3806 Tanner Dr., Midland, Tex. Phone MUtual 2-1051.

'29 MODEL A pickup (nos conv.). Good cond.; no rust. Top & wood parts need replacement. Best offer over \$150. Write to Chuck Schwab, 3716 N. Bosworth, Chicago.

1898 LOOMIS 2-cyl. one-seater. In good shape & good running cond. C. Bradford, Grove St., Rt. 1, Albany 3, N. Y.

'08 REO 2-cyl. tonneau touring car with top (see August MOTOR TREND). Unrestored. Transmission damaged over 40 years ago, car stored ever since. \$1000 or best offer. A. P. Young, 501 Eagle Rock Ave., Rt. 1, Livingston, N. J. Phone Caldwell 6-5418.

'48 LINCOLN CONTINENTAL hdp. with new V-12 engine. Showroom cond.; driven only on weekends. \$2000. H. O. Meuche, Broadview Acres, Princeton, Ind. Phone Fulton 5-4404.

'36 AUBURN 852 supercharged sed. Engine disassembled, ready to rebuild. Other Auburn parts for sale, including knock-off wheels & chassis for '33 Auburn 12. J. D. Frizzell, 108 N.W. 2nd St., Oklahoma City, Okla.

'42 LINCOLN CONTINENTAL conv. (rare model) in very good cond. New top, mats, paint



& tires, plus spare parts. \$950. Francis Manna, 411 Burritt Ave., Stratford, Conn.

'38 PACKARD 12 cb. sed. Body, interior, tires good. Engine needs work. Driven daily. \$250 or best offer. Par Moyer, 450 Blair Ave., St. Paul 3, Minn.

'56 DEUTSCH-BONNET Le Mans model. 750-cc competition car with Le Mans disc brakes, spare parts & tires. Raced 3 times. Beautiful yellow & black. Cost \$7000; sell for \$4250. Paul Gougeleman, 1641 W. Carroll Ave., Chicago 12. Phone Monroe 6-9394.

'39 PACKARD 1708 V-12 7-pass. touring sed. 58,000 orig. mi.; completely restored, even to new silk shades & striping. Improved with electric fuel pump & windshield wipers. \$2000. E. J. Sherwood, Rt. 1, Glen Falls, N. Y.

M-I sportster. Hardly driven; chassis, engine completely o-hauled. Cream, with red trim. Reasonable. Vernon Bloemker, c/o Willis Walla, North Bend, Neb.

'41 BUICK Super phaeton. Orig. black finish, exc. body, good tires. Can be driven anywhere. Will consider any reasonable offer. Ancel L. Lee, 202 Waverly St., Staunton, Va.

'48 LINCOLN CONTINENTAL conv. Following are only 3 mo. old: 10 coats black lacquer, white nylon top, pleated tan uph., nylon rugs, nylon wws. 1500 mi. on '54 Mercury engine. \$2450. Jerry Almo, Box 114-B, Waldorf, Md. Phone Midway 5-4201.

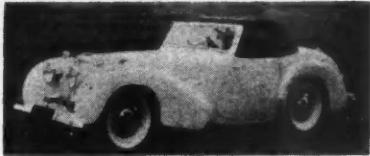


interior. \$1100 spent in 2-yr. restoration. \$785. Dr. James McEachen, Rt. 2, Box 124, Escondido, Calif. Phone SH 5-7532.

'35 DUESNERG J Murphy rdsr. Body & engine restored. Has JS-type exhaust manifold; does not have orig. transmission. J. Cannon, 210 S. Lorraine Blvd., Los Angeles 4. Phone Webster 5-4355.

'25 HUPMOBILE 3-dr. club sed. In daily use; good running cond. Best offer. Elmer Johnson, Box 314, Isle, Minn.

'30 ROLLS-ROYCE Phantom I town car. Exquisite coachwork by Inskip. Beautiful orig. finish; immac. interior. Left drive. 6 new 18" tires; drive anywhere. \$1500. Frank Hagen, Highland Park, Celina, Ohio.



'49 TRIUMPH 1800 rdstr. Alum. body with rumble seat; orig. equip't rebuilt. Immac. white paint & blue leather; new tires. \$1600 or best offer. Barry Weiss, 8 Horton St., Rye, N.Y. Phone Rye 7-1225.

'55 STUDEBAKER President spt. cpe. Orig. owner, 13,000 mi. All black, with w/w's, vinyl interior. \$1750. Robert C. Booth, 43 Candit Terr., West Orange, N.J. Phone ORange 6-4050.

'29 REO Flying Cloud in running cond. Good top, interior; easily restored. \$200 or best offer. Ray Zimmerman, Rt. 1, Peru, Ind. Phone GR-3-5945.

'31 CADILLAC V8 Model 355 4-dr. spt. sed. Wooden wheels, sidemount, large rear trunk. Attractive clean, in exc. running cond. \$395. Paul Rizzo, 72 Len Ct., East Meadow, N.Y.

'56 MG-A. White, with red leather. J. C. Fonnebeck, Steep Rock Lake, Ont., Canada.

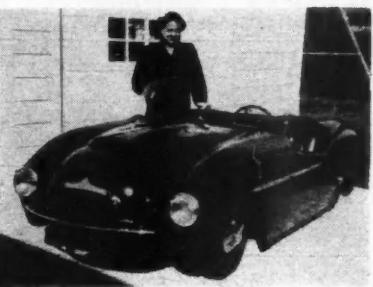
'41 PACKARD 4-dr. sed. with beautiful black body by LeBaron. In exc. running cond. Best offer over \$450. Miss Elaine Miller, Box 300, Clarks Summit, Pa. Phone Clarks Summit 6-7681.

'36 HORCH 5-pass. black conv. 3-position top, wire wheels, nearly new tires, sidemounts, in-place jacks, 4-speed transmission. Very rare; will drive anywhere. H. D. Hartshorn, 117 Ponce de Leon Ave., N.E., Atlanta, Ga.

'35 PACKARD Super 8 Dietrich conv., black, with 3-position top. Reputed to be built for member of Packard family. All orig. except top; 6 wire wheels, good rubber. No restoration needed. H. D. Hartshorn, 117 Ponce de Leon Ave., N.E., Atlanta, Ga.

'37 PACKARD V-12 7-pass. town car. Body by LeBaron. Runs perfectly, looks sharp, needs minor body work. \$1000 or new w/w's. \$400 firm. R. G. Hostetter, 14320 Edgewater Lane, Seattle 55, Wash.

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smale mold \$950. Won 1st custom trophy Central Ohio show. Pix Sept. Motor Life. W. J. Ziegler, 1850 Christopher Lane, Speedway 24, Ind.

'48 JEEPSTER. 4 cyl. with o.d. Everything orig. in good all-around cond. Top, body, tires, engine, uph.—all in good shape. Best offer around \$300. John Killalea, 135 S. 7th St., La Crosse, Wis.

'40 AUBURN Speedster (last model made). In storage past 9 yrs. Clear removable plexiglas top, 2-speed axle; needs very little to restore. \$1500 or best offer. Large photo 50c. Jim MacCammon, 4350 W. University, Dallas, Tex.

## SELL OR SWAP

'36 CORD 812 sed. Mechanically restored; factory-rebuilt engine. Body good. Will sell or trade for late model sports car. Dr. M. O. Klingler, 213 W. Laporte St., Plymouth, Ind.

'48 TUCKER rear engine sedan. Exc. cond.; very low mileage. \$3500. Will consider part trade. R. J. Turner, 1217 Nicollet Ave., Minneapolis, Minn.

'29 PACKARD deluxe 4-dr. sed. 6 wheels. Engine, tires, body, all good; uph. fair. Body sanded, ready to paint. \$150 or swap. What have you? P. V. Camiglia, 51-17 Junction Blvd., Elmhurst 73, Long Island, N.Y.

'41 PACKARD 180 LeBaron sps. sed. All orig. except new tires & paint. \$850, or will trade up or down for sports car. No junk please. R. H. Anderson, Box 1074, Columbus, Miss.

'31 MODEL A rara 2-dr. conv. sed. Set up 2 yrs since restored. \$275; might trade. All letters answered. Send 50c for large photo. Jim MacCammon, 4350 W. University, Dallas, Tex.

'46 LINCOLN CONTINENTAL conv. Orig. throughout, except for new black paint, transmission & o.d., orlon top & head liner. Leather uph. like new; 25,000 mi. \$1750; might trade. Large photo 50c. Jim MacCammon, 4350 W. University, Dallas, Tex.

'32 FORD V8 2-dr. sed. Orig. like new, low mileage, still has orig. handbook. \$375; might trade. Send 50c for large photo. Jim MacCammon, 4350 W. University, Dallas, Tex.

## SWAP

'33 FORD panel truck. Orig.; runs & looks good. Swap for old rdstr. or conv.—any make. Will add cash if necessary. All letters answered. W. W. Duncanson, 196 Van Buren Ave., Teaneck, N.J.

OLD AUTOMOBILE & truck sales catalogs & magazine ads for trading. Send stamped addressed envelope for list. Parker Little, 1746 Oconee Pass N.E., North Atlanta 19, Ga.

## WANTED

RADIATOR ORNAMENTS from cars of '20s & '30s: '32 Cad heron, '33 Chrysler gazelle, Hispano stork, Isotta flying man, Black Hawk sun dial, & what have you? T. G. Dickinson, 2229 McClellan Parkway, Sarasota, Fla.

'40 CADILLAC conv. cpe. Must be in fair cond. & reasonably priced. Send detailed description; pictures preferred. William Peters, 895 Union St., Brooklyn 15, N.Y. Phone NE 8-9432.

CORD phaeton, unmodified, supercharged. Midwest location. Must be A-1 mechanically; body, tires, top less important. Send lowest price (cash, no dicker-ing), pix, description to R. V. Daut, 1002 Davenport Bank Bldg., Davenport, Iowa.

49 to '51 CROSLEY Super Sports or Horshot, strictly stock, in good mechanical cond. Must be

within reasonable driving distance from Detroit. William H. Ludlow, 1111 Palmer Court, Port Huron, Mich. Phone YUKon 5-7942.

MORGAN Four-seater rdstr., near-new, in good cond. Write F. W. Bartleider, 2604 S. Cook, Denver 10, Colo.

LINCOLN CONTINENTAL PARTS: Two medallion script nameplates, "Lincoln Continental," one speedometer & other gauges for '41 Continental, two rubber moldings for side windows Continental hdp. Vernon Brooks, Rycom Ordnance Service, Supply Section, APO 331, Ft. Buckner, San Francisco, Calif.

'42 LINCOLN-ZEPHYR Model 26-H-72 3-window cpe. in mint cond. Prefer Midwest location. Premium for real jewel or info leading to purchase of same. G. F. Coburn, Cherokee, Iowa.

FOR '35 PIERCE-ARROW: 1 rt.-hand headlamp lens, marked "Guide Multibeam—Right." Part. No. 919018. O. H. Klausmeyer, Rt. 6, Box 14, S. Ironwood Rd., South Bend, Ind.

'41-'42 PACKARD-DARRIN Super 180 conv. cpe. Must be in good cond. Please state price, cond., & include photo. Joe Gilmore, 7107 Atlantic Ave., Ventnor, N.J.

'41-'48 '49 CHRYSLER 6 cyl. cpe. in immac., orig. cond. Give price, full description & recent photo if available. J. LeGory, 248 S. Allen St., State College, Pa.

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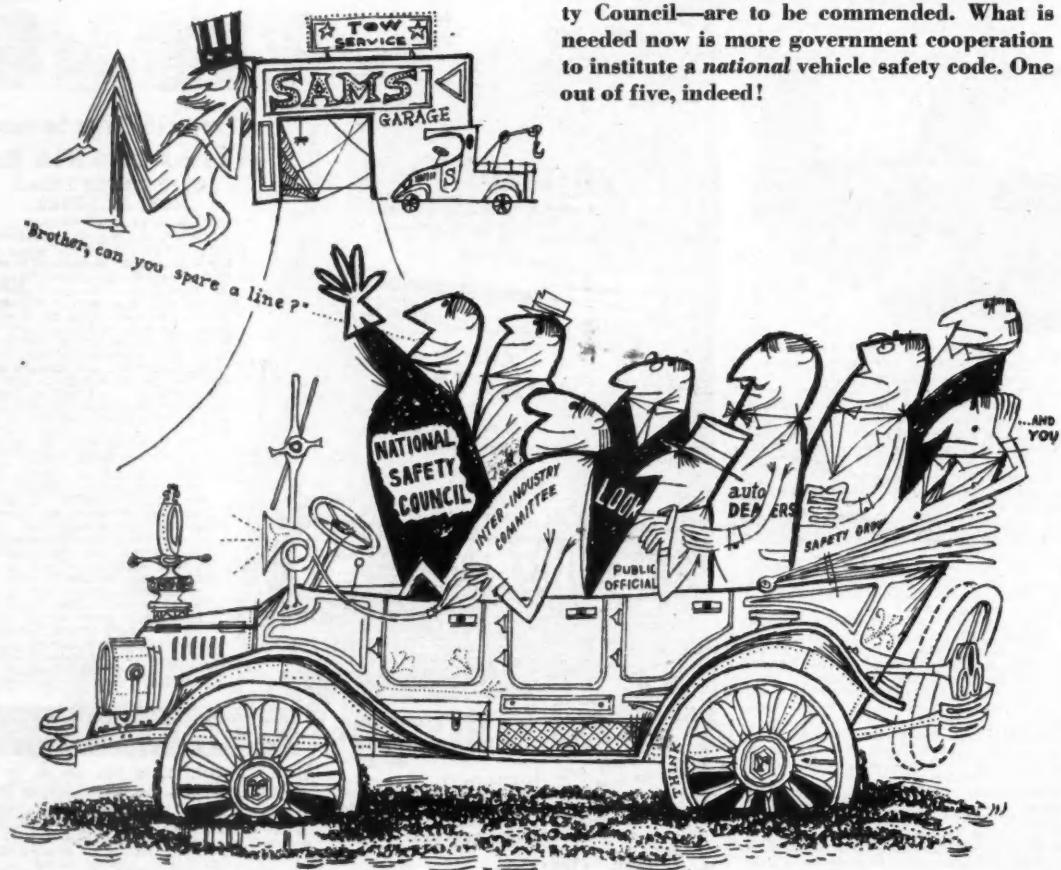
## FROM THE Rear SEAT

### One-in-five. Man alive?

SOMETIMES AN AROUSED CITIZENRY can do more than the government to promote a program, particularly when it involves their life and limb. Such seems to be the case with the National Vehicle Safety-Check program. Inaugurated in 1954, this year's program established a new record for voluntary citizen support. During the months of May and June, Safety-Check Lanes were in operation in 800 city and 95 county programs in 34 states. Only 13 states and the District of Columbia require regular vehicle inspection.

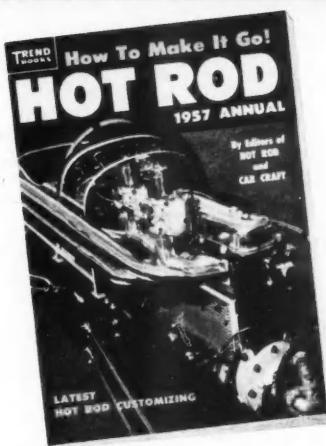
An unnerving fact brought to our attention by the Inter-Industry Highway Safety Committee is that of 2,200,000 cars and trucks that were voluntarily put thru the 10-point check, 440,000, or *one in five*, was in need of maintenance attention to one or more parts. Even more frightening is the fact that of the 10 items checked, the ones that stood out above the rest were: rear lights, brakes, and headlights!

The combined efforts of public officials, safety, civic and business groups, plus dealers in automotive and allied industries, and of course, the sponsors—Inter-Industry Committee, *Look* magazine, and the National Safety Council—are to be commended. What is needed now is more government cooperation to institute a *national* vehicle safety code. One out of five, indeed!



# 1957

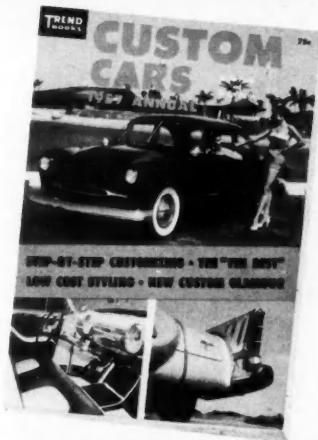
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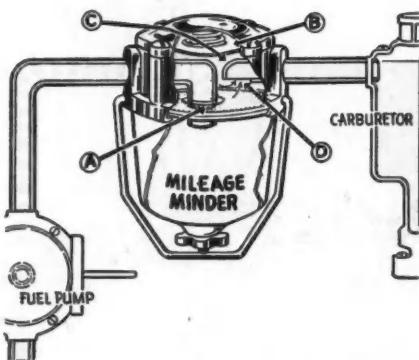
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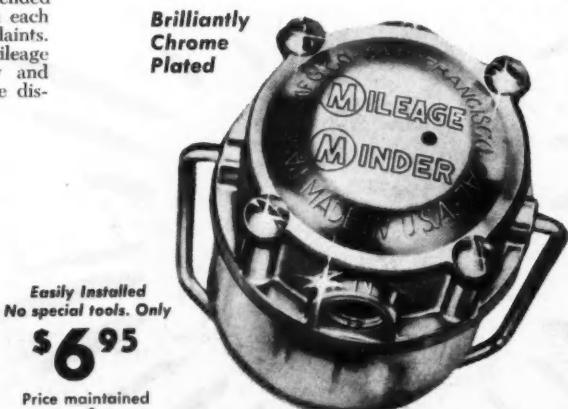
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